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THE

PRINCIPLES

OF

MIDWIFERY;

INCLUDING THE

DISEASES OF WOMEN AND CHILDREN.

BY JOHN BURNS, C. M.

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&c. &c.

FROM THE FIFTH LONDON EDITION, ENLARGED, WITH IMPROVEMENTS AND NOTES, BY

T. C. JAMES, M. D.

PROFESSOR OF MIDWIFERY IN THE UNIVERSITY OF PENNSYLVANIA.

IN TWO VOLUMES.

VOL. I.

PHILADELPHIA:

PUBLISHED BY EDWARD PARKER, No. 178, MARKET-STREET.

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1823.

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Eastern District of Pennsylvania, to wit:

SEAL. BE IT REMEMBERED, That on the fourth day of February, in the forty-seventh year of the Independence of the United States of America, A. D. 1823, EDWARD PARKER, of the said district, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, to wit:

"*The Principles of Midwifery; by John Burns, C. M. Regius Professor of Surgery in the University of Glasgow, &c. &c. From the fifth London Edition, enlarged, with improvements and notes, by T. C. James, M. D. Professor of Midwifery, in the University of Pennsylvania.*"

In conformity to the act of the Congress of the United States, entitled "An Act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times therein mentioned"—And also to the Act, entitled "An Act supplementary to An Act, entitled "An Act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies during the times therein mentioned," and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints."

D. CALDWELL,
Clerk of the Eastern District of Pennsylvania.

THE AUTHOR'S PREFACE.

IN preparing this work, I have endeavoured to proceed as much as possible upon the method of induction. I have collected with care the different cases which have been made public, as well as my own private observations. To these I have added the opinions and advices given by others, in so far as they seemed to be founded on facts, and supported by experience. From the whole I have deduced, in the different parts of my subject, both the symptoms and the practice.

The anatomical descriptions I have given from dissections and preparations before me whilst writing.

I intended to have added to the text copious references to the opinions and cases contained in systems, or scattered through other publications. This would have rendered the present book, in some manner, an index to those already published, and been of considerable service to practitioners, who wished to consult them upon any particular point. But in spite of all my endeavours, the work has extended to a length which rendered it necessary to strike out many references, and shorten the account of cases, to prevent it from swelling to a size which would have rendered it less generally useful.

Should this work fall only into the hands of those competent to judge in their profession, it would, if faulty or deficient, do little

8692

harm: But as it has been circulated extensively, it must, like other systems and elements, have an influence on the opinions and future practice of the student of midwifery; and will prove useful or injurious to society, according to the correctness of the principles it contains. When I consider how important the diseases of women and children are, and how much depends on the prudent management of parturition, I feel the high responsibility which falls on those who presume to give lessons in midwifery. I do, however, sincerely trust, that the precepts I have inculcated will be found agreeable to experience;—and, on a review of the whole, I cannot say that I have either wasted the reader's time in idle theory, or misled his opinion by mere speculation.

In preparing a fifth edition for the press, I have carefully revised the whole work, and have made additions, exceeding a hundred pages.

The notes which were formerly thrown to the end of the book, I have now placed, for the convenience of the reader, at the foot of the pages to which they belong.

Glasgow, Sept. 1820.

ADVERTISEMENT BY THE EDITOR.

THE following highly flattering character of the ensuing work, was given in the Edinburgh Medical and Surgical Journal, for the year 1810; since which it has passed through four successive editions by the author, each of which has added considerably, not simply to the size, but also to the intrinsic value of the work.

"The author, equally experienced as a teacher and practitioner, has by a judicious arrangement, by a faithful exposition of facts and observations, and by a methodical induction of the principles and practice of the art, accomplished in this work all that could be expected, in the present state of the science, to give a new interest to the subject.

"The prominent advantage, that confers upon it a decided preference to all others, as a *System* or *Class-book*, is, that every subject, directly or indirectly connected with the practice of the accoucheur, is here brought into one connected view.

"But what we are most disposed to recommend in this volume, is the pathological department, and the descriptions and treatment of the diseases of puerperal women, and of children. A more copious, scientific, and judicious account of these diseases, is perhaps no where to be met with."

One great advantage of this work to the student solicitous of full and accurate information on the subjects of which it treats, is to be experienced in the very valuable notes and references of the author, to almost all that has been communicated by practitioners of deserved celebrity, on parallel subjects or cases. In this point of view, it may be considered as the Common-place Book of an immense fund of the most useful practical knowledge, indispensible as a guide to the inexperience of the student, and earlier practitioner, and of no ordinary utility and aid to the maturer acquirements of advanced and established professional skill.

This edition has been considerably enlarged and improved by the author. The sections on abortion and uterine hemorrhage, will be found to have been very considerably extended, and rendered of far greater value;—indeed, they may now be considered, as containing the essence of his separate Treatises on those very interesting subjects, which have for some time enjoyed the approbation of the public.

The new articles, totally omitted in the former edition, but by the author introduced into this, are those on pneumonia, on ephemeral fever, on weed or intestinal fever, and on diarrhœa, as existing in the puerperal state, and on chorea, on bronchitis, and on peritonitis, as the diseases of the infantile age. These, it is presumed, will not fail to give additional interest to the work.

The editor has taken the liberty of introducing into the text, a section on the difference between the male and female pelvis; which, as he conceived, the author ought not to have omitted; and Dr. Clarke's account of the cauliflower excrescence of the os uteri.

Whether this is only a variety of the spongoid tumour, he will leave to the reader to decide. It appears to assume some difference in its form and train of symptoms. The history is from the pen of an accurate observer of nature, and a judicious and experienced practitioner.

As Baudelocque has explained the mechanism of parturition, more fully and minutely than almost any other writer, and as his work on midwifery has obtained considerable reputation with the medical public of the United States, it has been judged proper occasionally, to give a general view of his divisions of labour, together with the several species of presentations, which it may be useful to keep in recollection in actual practice. Some tables, relative to this part of our subject, from the last edition of his valuable work that have not, as far as we know, been hitherto translated, will also be given in the appendix. These, it is hoped, will not be entirely devoid of interest, either to the student or practitioner.

The chief mass of the notes in Dr. Chapman's edition of our author's production, have been, by permission, retained in this; these are marked with the letter C. The notes added by the present editor have alphabetical references, and are thus sufficiently distinguished from those of the author, and of the intelligent editor of whose information we have availed ourselves, and to whom we have just alluded. These will be found to be altogether of a practical nature, and are intended solely to explain, or illustrate the text; as it has been found rarely necessary to differ in sentiment from one, whose opinions seem generally to be founded on the solid basis of practical truth. Any additions made to the text, or author's notes, are included between brackets.

The author has rendered this fifth edition more interesting, by some valuable additional matter, amounting to upwards of one hundred pages; and the editor has subjoined a few notes, which he hopes will not be found entirely nugatory.

Philadelphia, November 9th, 1822.

CONTENTS.

BOOK I.

OF THE STRUCTURE, FUNCTIONS, AND DISEASES OF THE PELVIS AND UTERINE SYSTEM, IN THE UNIMPREGNATED STATE, AND DURING GESTATION.

CHAP. I.

Of the Bones of the Pelvis.

Section 1. General view - - *Page* 1
Section 2. Ossa innominata - - - 2
Section 3. Sacrum and coccyx - - 5

CHAP. II.

Of the Articulation of the Bones of the Pelvis, and their occasional separation.

Section 1. Of the symphysis pubis - - 7
Section 2. Sacro-iliac junction - - 8
Section 3. Vertebral junction, and obliquity of the pelvis - - - - 9
Section 4. Separation of the bones - - 9
Section 5. Difference of the female from the male pelvis - - - - 15

CHAP. III.

Of the Soft Parts which line the Pelvis.

Section 1. Muscles - - - - 17
Section 2. Arteries - - - - 18
Section 3. Nerves - - - - 19
Section 4. Lymphatics - - - 20

CHAP. IV.

Of the Dimensions of the Pelvis.

Section 1. Brim and outlet - - - 21
Section 2. Cavity - - - - 22
Section 3. Pelvis above the brim - - 24
Section 4. Axis of the brim and outlet - 25

CHAP. V.

Of the Head of the Child, and its progress through the Pelvis in Labour.

Section 1. Bones of the head - *Page* 25
Section 2. Size of the head - - - 26
Section 3. Passage of the head - - 28

CHAP. VI.

Of Diminished Capacity and Deformity of the Pelvis.

Section 1. Deformity from rickets - - 30
Section 2. Deformity from malacosteon - 32
Section 3. Deformity from exostosis and tumours - - - - - 35
Section 4. Means of ascertaining the dimensions and size of the head when broken down - 39

CHAP. VII.

Of Augmented Capacity of the Pelvis - 41

CHAP. VIII.

Of the External Organs of Generation.

Section 1. General view. - - - 42
Section 2. Labia and nymphæ - - 42
Section 3. Clitoris - - - - 43
Section 4. Urethra - - - - 43
Section 5. Orifice of vagina and hymen - 45

CHAP. IX.

Of the Internal Organs of Generation.

Section 1. Vagina - - - - 46
Section 2. Uterus and its appendages - 48

CHAP. X.

Of the Diseases of the Organs of Generation.

Section 1. Abscess in the labium - - 52
Section 2. Ulceration of the labia - - 53
Section 3. Excrescences on the labia - 56
Section 4. Scirrhous tumours - - 56
Section 5. Polypous tumours - - 57
Section 6. Œdema - - - 58
Section 7. Hernia, laceration, &c. - - 58

Section 8. Diseases of the nymphæ - *Page* 59
Section 9 Diseases of the clitoris - - 61
Section 10. Diseases of the hymen - - 62
Section 11. Laceration of the perineum - 64
Section 12. Imperfection of the vagina - 66
Section 13. Inflammation and gangrene of the vagina 67
Section 14. Induration, ulceration, and polypi - 68
Section 15. Inversion - - - 69
Section 16. Watery tumour - - - 69
Section 17. Hernia - - - - 70
Section 18. Encysted tumour and varices - 71
Section 19. Spongoid tumour - - 72
Section 20. Erysipelatous inflammation - 72
Section 21. Fluor albus - - - 74
Section 22. Affections of the bladder - - 79
Section 23. Excrescences in the urethra - 85
Section 24 Deficiency and mal-formation of the uterus 87
Section 25. Hysteritis - - - 89
Section 26. Ulceration of the uterus - - 90
Section 27. Scirro-cancer - - - 93
Section 28. Tubercles - - - 97
Section 29. Spongoid tumour - - - 100
Section 30. Cauliflower excrescence from the os uteri 101
Section 31. Calculi - - - - 104
Section 32. Polypi - - - - 104
Section 33. Malignant polypi - - - 109
Section 34. Moles - - - - 110
Section 35. Hydatids - - - 112
Section 36. Aqueous secretion - - 115
Section 37. Worms - - - - 116
Section 38. Tympanites - - - 117
Section 39. Prolapsus uteri - - - 117
Section 40. Hernia - - - - 125
Section 41. Dropsy of the ovarium - - 126
Section 42. Other diseases of the ovarium - 136
Section 43. Deficiency - - - 137
Section 44. Diseases of the tubes and ligaments 137

CHAP. XI.

Of Menstruation - *Page* 137

CHAP. XII.

Of Hysteria - - 142

CHAP. XIII.

Of Diseased States of the Menstrual Action.

Section 1. Amenorrhœa - - - 145
Section 2. Formation of an organized substance 153
Section 3. Dysmenorrhœa - - - 154
Section 4. Copious Menstruation - - 155
Section 5. Menorrhagia - - - 155

CHAP. XIV.

Of the Cessation of the Menses - 162

CHAP. XV.

Of Conception, and the term of Gestation - 163

CHAP. XVI.

Of the Gravid Uterus.

Section 1. Size and position - - - 167
Section 2. Development of the uterus, and state of its cervix - - - - - 169
Section 3. Muscular fibres - - - 170
Section 4. Ligaments - - - - 171
Section 5. Vessels - - - - 171
Section 6. Of the fœtus - - - 172
Section 7. Its peculiarities - - - 178
Section 8. Umbilical cord - - - 182
Section 9. Placenta - - - - 185
Section 10. Membranes and liquor amnii - 191
Section 11. Decidua - - - - 192

CHAP. XVII.

Of Sterility - - 194

CHAP. XVIII.

Of Extra-uterine Pregnancy.

Section 1. Symptoms, progress and species - 196
Section 2. Treatment - - - 204

CHAP. XIX.

Of the Signs of Pregnancy *Page* 206

CHAP. XX.

Of the Diseases of Pregnant Women.

Section 1. General effects - - - 212
Section 2. Febrile state - - - 215
Section 3. Vomiting - - - - 217
Section 4. Heartburn - - - 219
Section 5. Fastidious taste - - - 220
Section 6. Spasm of stomach and duodenum 220
Section 7. Costiveness - - - 221
Section 8. Diarrhœa - - - 222
Section 9. Piles - - - - 223
Section 10. Affections of the bladder - - 225
Section 11. Jaundice - - - 226
Section 12. Coloured spots - - - 226
Section 13. Palpitation - - - 227
Section 14. Syncope - - - - 228
Section 15. Dyspnœa and cough - - 228
Section 16. Hæmoptysis and hæmatemesis - 229
Section 17. Headach and convulsions - - 229
Section 18. Toothach - - - 231
Section 19. Salivation - - - 232
Section 20. Mastodynia - - - 232
Section 21. Œdema - - - - 233
Section 22. Ascites - - - - 233
Section 23. Redundance of liquor amnii - 235
Section 24. Watery discharge - - 238
Section 25. Varicose veins - - - 239
Section 26. Muscular pain - - - 239
Section 27. Spasm of ureter - - - 240
Section 28. Cramp - - - - 241
Section 29. Spasm of the uterus - - 241
Section 30. Distention of the abdomen - 242
Section 31. Hernia - - - - 242
Section 32. Despondency - - - 243

Section 33. Retroversion of uterus - *Page* 243
Section 34. Antiversion - - - 253
Section 35. Rupture of uterus - - 253
Section 36. Abortion, and treatment of pregnant women - - - - - 258
Section 37. Uterine hemorrhage - - 296
Section 38. False pains - - - 338

BOOK II.

OF PARTURITION.

CHAP. I.
Of the Classification of Labours - 343
CHAP. II.
Of Natural Labour.
Section 1. Stages of labour - - - 349
Section 2. Duration of process - - 353
Section 3. Of Examination - - - 355
Section 4. Causes of labour - - - 364
Section 5. Management of labour - - 366
CHAP. III.
Of Premature Labour - - 378
CHAP. IV.
Of Preternatural Labour - - 380
Order 1. Presentation of the breech - - 381
Order 2. Of the inferior extremities - - 386
Order 3. Of the superior extremities - - 387
Order 4. Of the trunk - - - 399
Order 5. Of the face, &c. - - - 399
Order 6. Of the umbilical cord - - 403
Order 7. Plurality of children and monsters - 405
CHAP. V.
Of Tedious Labour.
Order 1. From imperfection or irregularity of muscular action - - . - 408
Order 2. From some mechanical impediment 425

CHAP. VI.

Of Instrumental Labours.

Order 1. Cases admitting the application of the forceps or lever - - - *Page* 431
Order 2. Cases requiring the crotchet - 442

CHAP. VII.

Of Impracticable Labour - 470

CHAP. VIII.

Of Complicated Labour.

Order 1. Labour complicated with uterine hemorrhage - - - - 476
Order 2. With hemorrhage from other organs 477
Order 3. With syncope - - - 477
Order 4. With convulsions - - - 478
Order 5. With rupture of the uterus - - 487
Order 6. With suppression of urine - - 494

BOOK III.

OF THE PUERPERAL STATE.

CHAP. I.

Of the Treatment after delivery - 497

CHAP. II.

Of Uterine Hemorrhage - 501

CHAP. III.

Of Inversion of the Uterus - 516

CHAP. IV.

Of After-pains - - 523

CHAP. V.

Of Hysteralgia - - 525

CHAP. VI.

Of Retention of Part of the Placenta - 527

CHAP. VII.

Of Strangury - - 529

CHAP. VIII.

Of Pneumonia - - 530

CHAP. IX.
Of Spasmodic and Nervous Diseases *Page* 530
CHAP. X.
Of Ephemeral Fever, or Weed - 533
CHAP. XI.
Of the Milk Fever - - 536
CHAP. XII.
Of Miliary Fever - - 536
CHAP. XIII.
Of Intestinal Fever - - 538
CHAP. XIV.
Of Inflammation of the Uterus - 541
CHAP. XV.
Of Peritoneal Inflammation - 545
CHAP. XVI.
Of Peurperal Fever - - 549
CHAP. XVII.
Of Swelled Leg - - 558
CHAP. XVIII.
Of Paralysis - - - 563
CHAP. XIX.
Of Puerperal Mania and Phrenitis - 564
CHAP. XX.
Of Bronchocele - - 569
CHAP. XXI.
Of Diarrhœa - - 570
CHAP. XXII.
Of Inflammation of the Mamma, and Excoriation of the Nipples - - 571
CHAP. XXIII.
Of Tympanites - - 577
CHAP. XXIV.
Of the Signs that a Woman has been recently Delivered 578
APPENDIX - - - - - 581
TABLES - - - - - - 593

THE

PRINCIPLES

OF

MIDWIFERY.

BOOK I.

OF THE STRUCTURE, FUNCTIONS, AND DISEASES OF THE PELVIS AND UTERINE SYSTEM, IN THE UNIMPREGNATED STATE, AND DURING GESTATION.

CHAP. I.

Of the Bones of the Pelvis.

§ 1. GENERAL VIEW.

THE practical precepts, and rules in Midwifery, are easily understood, and readily acquired. They arise evidently from the structure and actions of the parts concerned in parturition; and whoever is well acquainted with this structure and these actions, may, from such knowledge, deduce all the valuable and important directions which constitute the Practice of Midwifery.

One of the first, and not the least important, of the parts concerned in parturition, is the pelvis, which must be examined, not only on account of its connection with the uterus and vagina, but also of its own immediate relation to the delivery of the child, and the obstacles which, in many instances, it opposes to its passage.

The pelvis consists in the full grown female, of three large bones, two of which are very irregular, having no near resemblance to any other object; on which account they have been called the

ossa innominata. These form the sides and front of the basin or pelvis. The back part consists of a triangular bone, called the os sacrum, to the inferior extremity or apex of which, is attached, by a moveable articulation, a small bone, which from its supposed resemblance to the beak of a cuckoo, has been named the os coccygis.

The os innominatum, in infancy, consists of three separate pieces: the upper portion is called the ilium, or haunch bone; the under, the ischium, or seat bone; and the anterior, which is the smallest of the three, is called the os pubis, or share bone. These all join together in the acetabulum, or socket, formed for receiving the os femoris, and are connected by a very firm gristle or cartilage. This, before the age of puberty, is converted into bone, so that the three different pieces are consolidated into one, though the names given to the bones originally are still applied to the different parts of the united os innominatum.

The sacrum also, which seems to consist only of one curved triangular bone, is really made up of several pieces, which, in the child, are nearly as distinct as the vertebræ, to which, indeed, they bear such a resemblance, that they have been considered as a continuation of them; but from their imperfect structure, and subsequent union, they have been called the false vertebræ.

The bones of the pelvis are firmly joined together, by means of ligaments and intermediate cartilages, and form a very irregular canal, the different parts of which must be briefly mentioned.

§ 2. OSSA INNOMINATA.

When we look at the pelvis, we observe, that the ossa innominata naturally divide themselves into two parts, the uppermost of which is thin and expanded, irregularly convex on its dorsum or outer surface, hollow on the inside, which is called the costa, and bounded by a broad margin, extending in a semicircular direction from before backwards, which is called the crest of the ilium. The under part or the os innominatum is very irregular, and forms, with the sacrum, the cavity of the pelvis. The upper expanded part has little influence on labour, and serves, principally, for af-

fording attachment to muscles. In the under part, we have several points to attend to.

1st. The upper and under parts form an angle with each other, marked by a smooth line; which is a continuation of the margin of the pubis, or anterior part of the bone. It extends from the symphysis pubis, all the way to the junction of the os innominatum with the sacrum, and is called the linea iliopectinea. It is quite smooth and obtuse at the sides, where the two portions form an angle; but at the anterior part, where the upper portion is wanting, it is sharp, and sometimes is elevated into a thin spine like the blade of a knife.

2d. The upper portion is discontinued exactly about the middle of this line, or just over the acetabulum; and at the termination, there is from this portion an obtuse projection overhanging the acetabulum, which is called the inferior spinous process of the ilium, to distinguish it from a similar projection about half an inch higher, called the superior spine.

3d. The under part of the bone is of the greatest importance, and in it we recognise the following circumstances. Its middle is large, and forms on the outside a deep cup or acetabulum, for the reception of the head of the thigh bone. On the inside, and just behind this cup, it forms a smooth polished plate of bone within the cavity of the pelvis, which is placed obliquely with regard to the pubis, and has a gentle slope forward. The cone of the child's head, in labour, moves downwards, and somewhat forwards, on this, as on an inclined plane; it may be called the plane of the ischium, although a part of it be formed by the ilium.

4th. Standing off from the back part of this, about two inches beneath the linea iliopectinea, is a short projection, called the spine of the ischium, which seems to encroach a little on the cavity of the pelvis, and is placed, with regard to the pubis, still more obliquely than the plane of the ischium. It must, consequently, tend to direct the vertex, as it descends, still more towards the pubis.

5th. Beneath this, the ischium becomes narrower, but not thinner; on the contrary, it is rather thicker, and terminates in a rough bump, called the tuberosity of the ischium.

6th. Next, we look at the anterior part of the bone, and find, that just before the plane of the ischium, there is a large hole in the os innominatum. This is somewhat oval in its shape; and at the upper part within the pelvis, there is a depression in the bone, which, if followed by the finger or a probe, leads to the face of the pelvis. The hole is called the foramen thyroideum.

7th. Before this hole the two ossa innominata join, but form with each other on the inside, a very obtuse angle, or a kind of smooth rounded surface, on which the bladder partly rests. The junction is called the symphysis of the pubis.

8th. The two bones, where they form the symphysis, are joined with each other for about an inch and a half; then they divaricate, forming an angle, the limbs of which extend all the way to the tuberosity of the ischium. This separation or divarication is called the arch of the pubis, which is principally constructed of the anterior boundary of the foramen thyroideum, consisting of a column or piece of bone, about half an inch broad, and one-fourth of an inch thick, formed by the union of the ramus of the pubis, and that of the ischium.

9th. At the upper part of the symphysis, or a very little from it, the os innominatum has a short obtuse projection, called the crest of the pubis, into which Poupart's ligament is inserted; and from this there runs down obliquely, a ridge on the outside of the bone, which reaches all the way to the acetabulum, and overhangs the foramen thyroideum.

10th. When we return to the back part of the os innominatum, we find, that just after it has formed the plane of the ischium, it extends backwards to join the sacrum; but in doing so, it forms a very considerable notch or curve, the concavity of which looks downwards. When the sacrum is joined to the bone, this notch is much more distinct. It is called the sacro-sciatic notch or arch: for one side is formed by the ischium, and is about two inches long; the other is formed chiefly by the sacrum, and is about half an inch longer. In the recent subject, strong ligaments are extended at the under part, from one bone to the other, so that this notch is converted into a regular oval hole.

11th. Lastly, this notch being formed, the bone expands back-

wards, forming a very irregular surface for articulation with the sacrum; and the bones being joined, we find that the os innominatum forms a strong, thick, projecting ridge, extending farther back than the spinous processes of the sacrum. This ridge is about two inches and three quarters long, and is a continuation of the crest of the ilium, but is turned downwards; whereas were the crest continued in its former course, it would meet with the one from the opposite side, behind the top of the sacrum, forming thus a neat semicircle; but this ridge, if prolonged on both sides, would form an acute angle, the point of junction being opposite the bottom of the sacrum. From this strong ligaments pass to the sacrum, to join the two bones.

§ 3. SACRUM AND COCCYX.

The sacrum forms the back part of the pelvis. It is a triangular bone, and gently curved; so that, whilst a line drawn from the one extremity to the other, measures, if it subtend the arch, about four inches; it will, if carried along the surface of the bone, measure full half an inch more. The distance betwixt the first, or straight line, and the middle of the sacrum is about one inch. The breadth of the base of the sacrum, considered as an angular body, is full four inches: the centre of this base is shaped like the surface of the body of one of the lumbar vertebræ, with the last of which it joins, forming, however, an angle with it, called the great angle, or promontory of the sacrum.(*a*) From this the bone is gently curved outward on each side, toward the sacro-iliac junction, contributing to the formation of the brim of the pelvis.

The upper half of the side of the bone is broad and irregular for articulation with the os innominatum. The anterior surface of the bone is smooth and concave; but often we observe transverse ridges, marking the original separation of the bones of the sacrum. Four pair of holes are found disposed in two longitudinal rows on the face of the sacrum, communicating with the canal which receives the continuation of the spinal marrow; through these the

(*a*) But more commonly the projection of the sacrum.

sacral nerves issue. These holes slope a little outward, and betwixt the two rows is the attachment of the rectum. The posterior surface of the bone is very irregular; and we observe, 1st. The canal extending down the bone, for receiving the continuation of the spinal marrow. 2d. At the upper part of this are two strong oblique processes, which join with those of the last lumbar vertebra. 3d. On a central line down the back of the canal, there is an irregular ridge analogous to the spines of the vertebræ. 4th. The rest of the surface is very irregular and rough; and we observe, corresponding to the holes for transmitting the sacral nerves on the exterior surface, the same number of foramina on this posterior surface, but, in the recent subject, they are covered with membrane, leaving only a small opening for the exit of nervous twigs.

The coccyx is an appendage to the sacrum, and as it is inclined forwards from that bone, the point of junction has been called the little angle of the sacrum. It is, at first, altogether cartilaginous, and cylindrical in its shape, but it gradually ossifies and becomes flatter, especially at the upper part, which has been called its shoulder. In men it is generally anchylosed with the sacrum, or at least moves with difficulty, but it almost always separates by maceration. In women it remains mobile, and, during labour, is pressed back so as to enlarge the outlet of the pelvis. By falls or blows it may be luxated; and if this be not discovered, and the bone replaced, suppuration takes place about the rectum, and the bone is discharged.

CHAP. II.

Of the Articulation of the Bones of the Pelvis, and their occasional separation.

§ 1. OF THE SYMPHYSIS PUBIS.

THE bones of the pelvis are connected to each other, by intermediate cartilages, and by very strong ligaments. The ossa innominata are united to each other at the pubis, in a very strong and peculiar manner. It was supposed that they were joined together by one intermediate cartilage; but Dr. Hunter* was, from his observations, led to conclude, that each bone was first of all covered at its extremity with cartilage, and then betwixt the two was interposed a medium, like the intervertebral substance, which united them. This substance consists of fibres disposed in a transverse direction.

M. Tenon† has lately published an account of this articulation; and is of opinion, that sometimes the one mode and sometimes the other obtains. I am inclined to think, that Dr. Hunter's description is applicable to the most natural state of the part; but we often, in females, find that the intermediate fibrous substance, especially at the posterior part, is absorbed, and its place supplied with a more fluid substance; or, on the contrary, anchylosis may sometimes take place; a circumstance which Dr. Hunter says he never saw, but which I have met with. Besides this mode of connection, there is also in addition a very strong capsule to the articulation, the symphysis being covered on every side with ligamentous fibres, which contribute greatly to the strength of the parts.

* Vide Med. Obs. and Inq. Vol. II. p. 333.

† Vide Mem. de l'Institut des Sciences, Tome VI. p. 172.

§ 2. SACRO-ILIAC JUNCTION.

The ossa innominata are joined to the sacrum by means of a thin layer of cartilaginous substance, which covers each bone; that belonging to the sacrum is the thickest: both are rough, and betwixt them is found a soft yellowish substance in small quantity. The connection of the two bones therefore, so far as it depends on this medium, cannot be very strong; but it is exceedingly strengthened by ligamentous fibres, which serve as a capsule; and behind, several strong bands pass from the ridge of the ilium to the back of the sacrum; sometimes the bones are united by anchylosis. At the lower part, additional strength is obtained by two large and strong ligaments, which pass from the ischium to the sacrum, and therefore are called the sacro-sciatic ligaments. The innermost of these arises from the spine of the ischium, is very strong, but at first not above a quarter of an inch broad; it gradually expands, however, becoming at its insertion about an inch and a quarter in breadth. It passes on to the sacrum, and is implanted into the lower part of the side of that bone, and the upper part of the coccyx. It converts the sacro-sciatic notch into a regular oval hole, the inferior end of which, owing to the neat expansion of the ligament, is as round and exact as the upper. As it makes a similar expansion downwards, there is a kind of semilunar notch formed betwixt it and the coccyx. The outer ligament may be said to arise from the side of the sacrum, and, like the other, is broad at that part. It runs for some time in contact with the inner ligament, and parallel to it; but afterwards it separates, passing down to be inserted in the tuber ischii; and, when the ligaments separate, their surfaces are no longer parallel to each other. There is, in consequence of this separation, a small triangular opening formed betwixt the ligaments; or rather there is an aperture like a bow, the string being formed by the under ligament, and the arch partly by the spine of the ischium, and partly by the upper ligament.

§ 3. VERTEBRAL JUNCTION AND OBLIQUITY OF THE PELVIS.

The pelvis is joined to the trunk above, by means of the last lumbar vertebra; to the extremities below, by the insertion of the thigh bones into the acetabula; and it is so placed, that when the body is erect, the upper part of the sacrum and the acetabula are nearly in the same line. The brim of the pelvis, then, is neither horizontal nor perpendicular to the horizon, but oblique, being placed at an angle of 35 or 40 degrees. Were the ligaments of the pelvis loosened, there would, from this position, be a tendency in the sacrum to fall directly towards the pubis, the ossa innominata receding on each side. But the structure of the part adds greatly to the power of the ligaments; for it is to be observed, that in standing, and in various exertions of the body, the limbs react on the pelvis; and the heads of the thigh bones pressing on the two acetabula, force the ossa innominata more closely on each other at the symphysis, and more firmly on the sacrum behind. It is not possible, indeed, to separate the bones of the pelvis, unless the connecting ligaments be diseased, or external violence be applied, so as to act partially or unequally on the pelvis.

§ 4. SEPARATION OF THE BONES.

By external violence, the symphysis has been wrenched open, as was the case with Dr. Greene;* or the sacro-iliac junction may be separated, as in the case of the young peasant, related by M. Louis.†

By some morbid affection of the symphysis, it may yield and become loosened during pregnancy, or may be separated during labour. Some have been inclined to consider this as an uniform operation of nature, intended to facilitate the birth of the child. Others, who cannot go this length, have nevertheless conjectured that the ligaments do become somewhat slacker; and have grounded this opinion on the supposed fact of the pelvis of quadrupeds

* Phil. Trans. No. 484.

† Vide Mem. de l'Acad. de Chir. Tome IV. p. 63.

undergoing this relaxation. But the truth is, that this separation is not an advantage, but a serious evil; and in cases of deformed pelvis, where we would naturally look for its operation, did it really exist, we do not observe it to take place.*

* Desault and Beclard maintain that the articulations loosen, and Boyer says that in one case, he found the sacro-iliac connection separated to the extent of half an inch; Chaussier, that he found the symphysis of the pubis separated to a greater degree, in an easy labour. Gardien observes that it only happens where there is a predisposition, for the head is too soft to force asunder the bones of the pelvis. Parè and Louis, and more lately Piet, suppose that the separation proceeds from swelling of the cartilages and simple extension of the ligaments; an opinion which Chaussier says he has confirmed by dissection. Baudelocque, on the other hand, asserts that it proceeds from extension of the ligament alone, the cartilages remaining the same in thickness. Pinault thought that the process of relaxation might be promoted by the use of baths and blood-letting; but this is correctly denied by Gardien, although both imagine that the relaxation is beneficial. Yet the continental calculators admit, that, in order to gain two lines in the antero-posterior diameter, there must be a separation of the pubis to the extent of one inch. Perhaps to obviate an objection which might be brought against the benefit of this natural separation, Plessman says that all the three articulations relax simultaneously, and thereby a greater advantage is gained with less injury to the individual joinings.(*b*)

(*b*) There is an animal, however, in which this separation of the bones of the pelvis during pregnancy and parturition does really take place, and in whom it appears to be an operation of nature to facilitate the latter process.—This animal is the Guinea Pig.

Le Gallois says, that upon comparing the pelvis of the female of the Guinea Pig with the head of a full grown Fœtus, it appears utterly impossible, that the latter should pass through the former, if the pelvis constantly preserved the state and dimensions at any other time than that of gestation.

When the female Guinea Pig is alive, the diameter of the pelvis is asserted to be but about one-half of the head of the Fœtus; and nevertheless, Guinea Pigs are delivered with much ease.

The duration of gestation in these animals being about 65 days—About three weeks before delivery, the symphysis pubis is observed to acquire more thickness and a slight mobility; these are continually increasing. Eight or ten days before delivery, the two ossa pubis begin to separate from each other. This separation increases slowly at first, and only begins to go on rapidly for the three or four days which precede delivery.—At the moment of parturition, according to Le Gallois, it is such as readily to admit the middle finger, and sometimes both the middle and fore finger together.

The delivery being accomplished, the bones of the pubis soon close. Twelve hours after, the distance of the separation has lessened more than one half; and

When a person stands, pressure is made upon the symphysis, and therefore, if it be tender, pain will then be felt. In walking, pressure is made on the two acetabula alternately, and the ossa innominata are acted on by the strong muscles which pass from them to the thighs, so that there is a tendency to make the one os pubis rise above the other; but this, in a sound state of the parts, is sufficiently resisted by the ligaments. In a diseased state, however, or in a case of separation of the bones, there is not the same obstacle to this motion: and hence, walking must give great pain, or be altogether impossible: even attempts to raise the one thigh above the other, in bed, must give more or less pain, according to the sensibility or laxity of the symphysis. Standing has also an effect on the symphysis, as I have mentioned; but sometimes the person can, by fixing one os innominatum, with all the muscles connected with it, and throwing the chief weight of the body to that side, stand, for a short time, easier on one leg than on both. This is the case, when one os innominatum has been more acted on than the other, at the sacro-iliac junction. The person can stand easiest on the soundest side. The patient also, especially if the relaxation be accompanied with any degree of relaxation of uterine attachments, instinctively crosses her legs when standing, thereby obtaining relief.

From these observations, we may learn the mischievous consequences of a separation of the bones, and also the circumstances which will lead us to suspect that it has happened. If the bones be fully disjoined, then, by placing the finger on the inside of the symphysis, and the thumb on the outside, we can readily perceive a jarring or motion, on raising the thigh.

It is well known to every practitioner, that owing to the distension of the muscles during pregnancy, very considerable pain is sometimes felt at the insertion of the rectus muscle into the pubis; and it is also known, that sometimes, in consequence of pregnancy, the parts about the pelvis, and especially the bladder and urethra, and

24 hours after, they are in contact at their anterior extremity; and in less than three days they are perfectly so through the whole extent of their symphysis, which then only presents a slight thickness and mobility. A few days after, nothing is to be seen. But when the females are old or sick, the union takes place more slowly. Vide Le Gallois's experiments.

even the whole vulva may become very irritable. This tender state may be communicated to the symphysis; or some irritation, less in degree than that I have mentioned may exist, which, in particular cases, seems to extend to the articulation, producing either an increased effusion of interstitial fluid in the intermediate cartilage, and thus loosening the firm adhesion of the bones, or a tenderness and sensibility of the part, rendering motion painful. In either case, exertion may produce a separation : and certainly, in some instances, has done so. The separation is always attended with inconvenience, and often with danger, especially when it occurs during parturition; for abscess may take place, and the patient sink under hectic fever; or inflammation may be communicated to the peritoneum, and the patient die in great pain.

When the accident happens during gestation, it sometimes takes place gradually, in consequence of an increasing relaxation of the articulation, from slow but continued irritation. In the other instances, it happens suddenly after some exertion. It may occur so early as the second, or so late as the ninth month, and is discovered by the symptoms mentioned above; such as pain at the pubis, strangury, and the effects of motion. In some instances, considerable fever may take place, but in general, the symptoms are not dangerous, and I do not know any case which has terminated fatally before delivery. A state of strict rest, the application of a broad firm bandage round the pelvis, to keep the bones steady, and the use of the lancet and antiphlogistic regimen, if there be fever or much pain, are the chief points of practice. Nor must it be forgotten for a moment, that although by these means, the symptoms are removed, the patient is liable, during the remaining term of gestation, or at the time of delivery, to a renewal of the relaxation or separation, from causes which, in other circumstances, would have had no effect. So far as I have been able to learn, a woman who has had this separation in one pregnancy, is not, in general, peculiarly liable to a return of it in a subsequent pregnancy, though there may be particular exceptions to this observation.*

* Dr. Denman mentions an instance, where the patient, in three succeeding pregnancies, was progressively worse, and did not, until the lapse of eight years, recover from the lameness produced by the third delivery. Introd. Vol. I. p. 16.

When it happens during parturition, it sometimes takes place in a pelvis apparently previously sound; but in most instances, we have, during some period of gestation, symptoms of disease about the symphysis; and so far from making labour easier, the woman often suffers more when the symphysis is previously relaxed. The primary and immediate effects are the same as when the accident happens during pregnancy; but the subsequent symptoms are frequently much more severe and dangerous, the tendency to inflammation being strong. The pain may be either trifling or excruciating at the moment, according to the sensibility of the parts. But even in the mildest case, great circumspection is required, violent inflammation having come on so late as a fortnight after the accident. The means used in the former case are to be rigidly employed, and the woman should keep her thighs together, and lie chiefly on her back. If the separation have been slight, reunion may take place in a few weeks, sometimes in a month;* but if a great injury have been sustained, it may be many months, perhaps years before recovery be completed; and, in such cases, it is probable, that at last, an anchylosis is sometimes formed.

Either owing to the violence of the accident, or the peculiar state of the parts, it sometimes happens that inflammation takes place to a very considerable degree in the symphysis; but it is to be remarked, that the symptoms are by no means uniformly proportioned in their severity to the degree of the separation. Inflammation is known by the accession of fever, with acute pain about the lower part of the belly, greatly increased by motion, succeeding to the primary effects; or, sometimes, from the first, the pain is very great, and not unfrequently it is accompanied by sympathetic derangement of the stomach and bowels, such as vomiting, nausea, looseness, &c. Presently matter forms, and a well marked hectic state takes place. The patient is to be treated, at first, by the usual remedies for abating inflammation, such as general and local evacuation of blood, fomentations, and laxatives. When

* In one case, where the symphysis was divided, the patient was able to walk on the 15th day.—In Dr. Smollet's case, although in the eighth month of gestation, the bones were found to rise above each other, yet the woman recovered in two months after delivery. Smellie, Vol. II. col. 1. n. i. c. 2.

matter is formed, we must carefully examine where it is most exposed, and let it out by a small puncture.*

The inflammation may be communicated to the peritoneum, producing violent pain in the lower belly, tumefaction and fever, and almost uniformly proves fatal; though frequently the patient lives until abscess takes place in the cellular substance within the pelvis. If any thing can save her, it must be the prompt use of blood-letting and blisters.

In almost every case of separation of the pubis, considerable pain is felt in the loins, even although the junction at the sacrum be entire, and the ossa pubis be very little asunder. But when the separation is complete, and in any way extensive, then the articulation of the sacrum with the ossa innominata,† especially with one

* As an illustration of this disease, I shall relate the outlines of a case mentioned by Louis, in the Memoirs of the Royal Academy of Surgery. A woman in the second month of her pregnancy, after pressing in a drawer with her foot, felt a considerable pain at the lower part of the belly, greatly increased by every change of posture; and along with this she complained of strangury. She was bled, and purged, and kept at rest, by which means, especially by the last, she grew better. But in the two latter months of pregnancy, the symptoms were renewed, so that presently she could neither walk, nor even turn in bed, without great pain; but her greatest suffering was caused by raising the legs to pull on her stockings, as then the bones were more powerfully acted on. A slight degree of hectic fever now appeared. Her delivery was accomplished easily; but on the evening of the third day, when straining at stool, after having received a clyster, the pain, which had troubled her little since her labour, returned with as much severity as ever. On the 5th day the pulse was very weak and frequent, she sweated profusely, and had a wildness in her countenance, with symptoms of approaching delirium. In the afternoon the pulse became full and tense, with vertigo and throbbing of the arteries of the head. The pain at the symphysis was excruciating, and although she was fomented and bled seven times, she obtained no relief. On the 8th day the pain abated, but diffused itself over the rest of the pelvis, particularly affecting the left hip and the sacrum. On the 11th day she died. On opening the body, there was found a separation of the bones at the pubis, but the capsule was entire, and much distended. It contained about an ounce and a half of matter. Whether the timeous evacuation of this matter might have saved the patient, is a question worth our consideration. I am disposed to answer it in the affirmative, from observing, that wherever the patient has recovered in such circumstances, it has uniformly happened, that a discharge of matter has taken place.

† Dr. Laurence shewed Dr. Smellie a pelvis, where all the bones were separated to the extent of an inch.

of them, is more injured,* and the person is lame in one or both sides, and has acute pain about the posterior ridge of the ilium,† and in the course of the psoas and glutei muscles. The mischief may also commence in the sacro-iliac articulation, and the symphysis may be little affected. The general principles of treament are the same as in the former case. When suppuration takes place about the sacro-iliac articulation, the danger is greatly increased.

In all cases of separation, when the patient has recovered so far as to be able to move, the use of the cold bath accelerates the cure; the general health is to be carefully attended to, and any urgent symptom supervening, is to be obviated by suitable remedies.

§ 5. DIFFERENCE OF THE FEMALE FROM THE MALE PELVIS.

[A slight inspection is sufficient to show the difference in form and proportions, between the female and the male pelvis.

The cristæ, as well as the anterior and superior spinous processes of the ossa ilia, are farther separated in the female pelvis, hence affording a greater concavity to the iliac fossæ, and greater capacity to the large or superior pelvis. The two straits which terminate the cavity of the pelvis, differ also considerably in the two sexes. The circumference, or brim of the superior strait is larger and more rounded in the female, the sacro-vertebral projection is less prominent; the two tuberosities of the ischia are also less rough,

* In a case related by De la Malle, the pain did not appear till the 14th day after delivery, and was felt first in the groin. The patient was unable to move the leg, and had acute fever, which proved fatal. The sacrum was found separated three lines from the ilium.

In the operation of dividing the pubis in a parturient woman, it was found that one side yielded more than the other, and consequently that side would suffer most at the sacrum. Baudelocque, L'Art, &c. section 2063.

† D. Smellie relates an instance, where, during labour, the woman felt violent pain at the right sacro-iliac symphysis. On the 5th day this pain was extremely severe, and attended with acute fever; but the symptoms were abated by blood-letting, and a clyster, and fomentations, which produced a copious perspiration. She was not able to walk for five or six months without crutches, but was restored to the use of the limb, by means of the cold bath. Coll. l. n. i. c. 1.

less projecting, and farther separated, than in the male; and finally, the extremity of the os coccygis does not approach so near to the arch of the pubis, which affords to the inferior strait, greater extent from its anterior to its posterior termination.

With regard to the excavation of the pelvis, it is more concave in the posterior part in the female, because the sacrum has greater height and curvature; the arch of the pubis is broader,(c) and its branches are also turned more outward and forward. The region of the pubis is less convex, and the cartilage, which forms the symphysis, is thicker and shorter, offering towards the interior of the pelvis a prominence more remarkable than in the male.

But in this very conformation, which nature appears to have intended to render labour more easy, there are certain circumstances exposing the female to peculiar inconveniences, which in men are more rarely observed; thus the superior spinous processes which anteriorly terminate the cristæ, or spine of the ilium, could not be separated to a greater distance, without increasing the length of Poupart's ligament, forming the crural arch; from thence it follows, that the intestine and epiploon, finding in this part less resistance and a larger aperture, must more frequently pass down and produce femoral hernia.

Again, women having their hips farther separated, must necessarily step with less firmness than men: for in progressing, when one leg is elevated, the centre of gravity of the body is less readily thrown upon the other, which rests on the ground; from hence results a species of claudication or vacillating gait, in which the trunk and the inferior extremities, instead of advancing directly or in a straight line, describe greater or smaller arches of circles.](d)

(c) Sœmmering observes, that the angle between the diverging branches of the pubis, is in the male an acute one; but in the female forms an angle of from 80 to 90 degrees, and hence approaches nearer to the figure of an arch, from which it receives its name.

(d) Vide Capuron. cours theorique et practique, &c. Sœmmering Tabula Sceleti feminini juncta descriptione.

CHAP. III.

Of the soft Parts which line the Pelvis.

§ 1. MUSCLES.

Various strong, and large muscles, pass from the spine and pelvis to the thigh bones, and act as powerful bands, strengthening, in a very great degree, the articulations of the pelvis. These it is not requisite to describe, but it will be useful, briefly to notice the soft parts which line the pelvis, and which may be acted on by the child's head during labour.

1st. When we remove the peritoneum from the cavity of the pelvis, we first of all are led to observe, that all the under portion of the os innominatum, and part of the sacrum, are covered with a layer of muscular fibres, which arises at the brim of the pelvis, and can be traced all the way down to the extremity of the rectum. This is the levator ani; it is a strong muscle, with many glossy tendinous fibres, especially at the fore part, where it lines the ossa pubis. Under the symphysis, it is pierced by the urethra and vagina; and during the passage of the child's head, those fibres which surround the vagina must be considerably distended; and this is more readily affected, as the anus is brought forwards when the perinæum is distended.

2d. Under this, on each side, we have arising from the membrane that fills up the thyroid hole, and also from the margins of the hole and the inner surface of the ischium, the obturator internus, which forms at that part a soft cushion of flesh, the fibres running backwards and downwards, and terminating in a tendon, which passes over the sacro-sciatic notch, running on it as on a pully, in order to reach the root of the trochanter.

3d. We find the pyriformis arising from the under part of the hollow of the sacrum, and also passing out at the notch, to be inserted with the obturator; and in laborious parturition, the injury

or pressure which these muscles sustain, is one cause of the uneasiness felt in moving the thighs.

4th. From the spine of the ischium, originates the coccygeus, which runs backward to be inserted into the side of the coccyx, in order to move and support it. This gradually becomes broader, as we recede from its origin, and is spread on the inside of the sacro-sciatic ligament. Thus the cavity of the pelvis is lined with muscular substance, whose fibres are disposed in a very regular order, and which are exhibited when the peritoneum and its cellular substance are removed.

5th. When we look at the upper part of the os innominatum, we find all the hollow of the ilium occupied with the iliacus internes, the tendon of which passes over the fore part of the pelvis, to reach the trochanter of the thigh. Part of this muscle is covered by the psoas which arises from the lumbar vertebræ, and passes down by the side of the brim of the pelvis to go out with the former muscle: though just upon the brim, it does not encroach on it, so as perceptibly to lessen the cavity. These muscles afford a soft support to the intestines and gravid uterus.

§ 2. ARTERIES.(e)

Running parallel with the inner margin of the psoas muscle, and upon the brim of the pelvis, along the posterior half of the linea iliopectinea, we have the iliac artery and vein; the artery lying, for the upper half of its course, above the vein, and for the under half on the outside of it; when filled, they, especially the vein, encroach a little on the brim. About three inches from the symphysis, they quit the brim, running rather more outward, over the part which forms the roof of the acetabulum, and pass out with the psoas muscle. The great lash of arteries and veins connected with the pelvis, and inferior extremities, is placed on the sacro-iliac junction. The iliac vessels, are so situated, that they escape pressure during labour, when the head enters the cavity of the pelvis; but the hypogastric vessels must be more or less com-

(e) Consult Engravings of the Arteries by C. Bell. Finley's Philadelphia Edition.

pressed, according to the size or position of the head, but the circulation is never interrupted.

§ 3. NERVES.

When we attend to the nerves, we find, 1st. Upon the ilium, at least four branches of cutaneous nerves, traversing the iliac, and psoas muscles, in order to pass out below Poupart's ligament. The largest of these cutaneous nerves is the outermost, which has its exit towards the spine of the ilium. These nerves, which supply chiefly the skin of the thigh, cannot suffer during labour; but sometimes may, from the position of the child, or the inclination of the uterus, sustain pressure, during gestation, and occasion numbness and anomalous sensations in the thigh. 2d. Between the two muscles, and in part covered by the outer margin of the psoas, is the anterior crural nerve, which is formed by the second, third, and fourth lumbar nerves. It is of considerable size, and has a greater share than the others, in producing the uneasy sensations I have mentioned. 3d. Running parallel with the brim of the pelvis, but three quarters of an inch below it, in the cavity of the pelvis, is the obturator nerve, coming from the third lumbar, and which may be traced all along the side of the ilium to the thyroid hole. In many cases, it cannot fail, during labour, to be pressed on by the head. 4th. Beneath the vessels at the sacro-iliac junction, we have the great nerves which form the sciatic nerve, which is made up of the fourth and fifth lumbar nerves, and the first sacral nerve, which is as large as either of the former: to these are added the second and third sacral, which are much smaller. The fourth lumbar nerve passes down on the sacro-iliac junction, and is quite covered with the vessels. The fifth traverses that curved part of the sacrum, which lies betwixt its promontory and side; like the former, it is hid by the vessels. In going to form the sciatic nerve, the fourth lumbar nerve passes under the gluteal artery, or the common trunk of the gluteal and ischiatic arteries, and the fifth passes over it. The first sacral nerve passes along the upper margin of the pyriform muscle, to join with these at the sacro-sciatic notch. There a large plexus

is formed, which, uniting into a single trunk, passes out, and is the greatest nerve in the body. The lumbar nerves may be pressed on early in labour; but from the cushion of vessels and cellular substance which defends them, they suffer little. When the head has descended lower, and is beginning to turn, the first sacral nerve may be compressed. Pressure of the nerve produces pain, numbness, and cramp in the thigh and leg. Different nerves are acted on in different stages of labour. In the very beginning, the anterior crural nerve may be irritated or gently compressed, producing pain in the fore part of the thigh; next the obturator, producing pain in the inside; and last of all, the back part suffers from the pressure on the ischiatic nerve. 5th. The second and third sacral nerves are small, compared to the first. They are covered by the pyriformis muscle, but part of them pierce it, forming a plexus, which joins the sciatic nerve, and sends twigs to the bladder, rectum, &c. This plexus may be pressed in the last stage of labour; and the irritation thus produced may be one cause of the passage of the fæces, which generally takes place involuntarily. 6th. The fourth sacral nerve is altogether devoted to the extremity of the rectum, and its vicinity.

The great plexus, forming the sciatic nerve, as it lies in the sacro-sciatic notch, yields to any pressure it may receive, and cannot suffer in labour, at least so as to cause inconvenience; but the nerves going to it may suffer, and the person not only have cramp and pain during labour, but palsy and lameness for a long time afterwards. Friction, and the warm bath, at first, may relieve the pain; and then, the cold bath may, with much advantage, be employed for perfecting the cure.

§ 4. LYMPHATICS.

The lymphatics in the upper part of the pelvis follow the course of the iliac vessels, forming a large and very beautiful plexus, from Poupart's ligament to the lumbar vertebræ. These are out of the way of pressure during labour. Numerous glands accompany them, which are sometimes enlarged by disease, but they do not interfere with parturition. The lymphatics of the cavity of the

pelvis have glands in the course of the vagina and rectum: and these, if enlarged, may impede delivery.

CHAP. IV.

Of the Dimensions of the Pelvis.

§ 1. BRIM AND OUTLET.

The pelvis has been divided into the great and the little, the first being formed by the expansion of the ilia, and the second, comprehending all that part which is called the cavity of the pelvis, and which lies below the linea ilio-pectinea. The cavity of the pelvis is the part of the chief importance in Midwifery, and consists of the brim, or entrance, the cavity itself, and the outlet. The brim of the pelvis has no regular shape, but approaches nearer the oval than any other. The short diameter of this, extends from the symphysis of the pubis to the top of the sacrum. This has been called the conjugate, or antero-posterior diameter, and measures four inches. The lateral diameter measures five inches and a quarter; and the diagonal diameter, or a line drawn ftom the sacro-iliac symphysis to the opposite acetabulum, measures five inches and an eighth; but as the psoæ muscles, and iliac vessels, overhang the brim a very little at the side, the diagonal diameter, in the recent subject, appears to be the longest. From the sacro-iliac symphysis to the crest of the pubis, on the same side, is four inches an a half. From the top of the sacrum, to that part of the brim which is directly above the foramen thyroideum, is three inches and a half. The line, if drawn to the acetabulum, in place of the foramen, is a quarter of an inch shorter; a line drawn across the fore part of the brim, from one acetabulum to another, is nearly four inches and a quarter.

The outlet of the pelvis is not so regular as the brim, in its shape, even when the soft parts remain; but it is somewhat oval. The long diameter extends from the symphysis pubis to the coccyx, and measures, when that bone is pushed back, as in labour, five inches, but an inch less when it is not. The transverse diameter, from the one tuberosity of the ischium to the other, measures four inches. The outlet of the pelvis differs materially from the brim, in this respect, that its margins are not all on the same level; an oval wire will represent the brim, but, if applied to the outlet, it must be curved. The outlet, from the symphysis pubis to the tuberosity of the ischium, is semi-oval; but behind, it becomes more irregular, and bends upwards and backwards. The arch of the pubis, or the fore part of the outlet, is four inches broad at its base; and a perpendicular line, dropped from its centre to the bone, is fully two inches long. The top of the arch will permit a circular body to come in contact with it, whose diameter is an inch and a quarter. The length of each limb of the arch is three inches and a quarter.

§ 2. CAVITY.

The cavity of the pelvis is the next part to be attended to; and the most important observation to be made, is, that it is of unequal depth. At the back part it measures from five to six inches, according as the coccyx is more or less extended; at the side, a line drawn from the brim, to the tuberosity of the ischium, measures three inches and three-fourths. At the fore part, the depth of the symphysis pubis is an inch and a half. When the surface of the child's head, then, is parallel to the lower edge of the symphysis, the head is still far from having entered fully into the cavity of the pelvis; it cannot be considered in the cavity, until it be lodged fairly in the hollow of the sacrum.

It may be proper to notice the dimensions of different parts of the cavity itself. An oblique line, drawn from the sacro-iliac junction, on one side, down to the opposite tuberosity, measures six inches; and the long axis of the child's head, before it takes the turn forwards, corresponds to this line. From the ramus of the

ischium, to the opposite sacro-iliac junction, is five inches. From the top of the arch of the pubis, or orifice of the urethra, to the second bone of the sacrum, is four inches and five-eighths, to five inches. A line drawn from the top of the arch to the top of the sacrum, is about a quarter of an inch more than the antero-posterior diameter of the brim. From the top of the arch to the spine of the ischium, is three inches and a half. From the tuberosity of the ischium to the centre of the sacrum is four inches. From the back part of the tuberosity to the sacro-iliac junction on the same side, is three inches and a half. From the extremity of the tuberosity to the spine of the ischium, is two inches. From the spine to the sacrum is two inches, and from the top of the arch of the pubis to the plane of the ischium, is two inches. The breadth of the plane itself is two inches; so that a line traversing these different parts, from the symphysis to the sacrum, would measure, including its slight irregularities, six inches. From the tuberosity to the inferior part of the thyroid hole, is an inch and a half, the long diameter of the sacro-sciatic notch, is two inches and three-eighths; the short, one inch and three quarters.*(f)*

In the living subject, we can readily recognise these different parts of the pelvis; and by the relation which one bears to the rest, we can ascertain, by careful examination with the finger, not only the relative position of the head with regard to any one spot, and consequently, its precise situation and progress in the pelvis, but also the shape and dimensions of the pelvis itself.*(g)*

(f) There may be some variation in dimensions, as stated by different writers; but it is probable, the above were given by our author, from actual measurement, of what he considered, a standard pelvis. A similar observation may be applied to the dimensions of the child's head, as stated in the succeeding chapter.

(g) The very ingenious and indefatigable Bichat has observed, that stature has no influence, or at least very little, on the dimensions of the pelvis; and that the individual differences which may occur, are totally independent of stature. It is acknowledged, continues he, that delivery is as easy in small as in large women, although the first may bring forth very bulky children, and who, indeed, may be disproportioned to the bulk of their mother's bodies, if a comparison of size should be instituted between the two.

Anatomie Descriptive, vol. 1 *p.* 181—2.

§ 3. PELVIS ABOVE THE BRIM.

The shape, extent, and dimensions of the great pelvis, or that part which is above the brim, must be mentioned likewise, especially as these are of importance in estimating the deformity of a pelvis. From the symphysis pubis to the commencement of the iliac wing, at the inferior spinous process, is nearly four inches. From the inferior spinous process to the posterior ridge of the ilium, a line subtending the hollow of the costa, measures five inches. The distance from the superior spine is the same. From the top of the crest of the ilium to the brim of the pelvis, a direct line measures three inches and a half. The distance betwixt the two superior anterior spinous processes of the ilium, is fully ten inches. A line drawn from the top of the crest of the ilium to the opposite side, measures rather more than eleven inches, and touches in its course the intervertèbral substance betwixt the fourth and fifth lumbar vertebræ. A line drawn from the centre of the third lumbar vertebra, counting from the sacrum to the upper spine of the ilium, measures six inches and three quarters. A line drawn from the same vertebra to the top of the symphysis, measures seven inches and three quarters, and, when the subject is erect, this line is exactly perpendicular.

To conclude my observations on the dimensions of the pelvis, I remark, that the shape is different in the child and the adult. The dimensions of the brim are reversed in these two states; the long diameter of the fœtal pelvis, extending from the pubis to the sacrum. By slow degrees, the shape changes; and nearly about the time of puberty, the conjugate and lateral diameters are equal. When the female is fully perfected, the brim becomes more oval, the long diameter extending from one side to the other. If a girl should, very early, become a mother, the shape of the pelvis may occasion a painful and tedious labour.(*h*)

(*h*) This remarkable difference in the comparative dimensions of the female pelvis before and after puberty, has been pointed out by analogy, and observed among the females of quadrupeds whose pelvis does not complete its developement, nor acquire the form and proportions necessary for the expulsion of the fœtus until the period of puberty. *Vid. Capuron.*

§ 4. AXIS OF THE BRIM AND OUTLET.

Finally, we are to remember that the brim, and the outlet of the pelvis, are not parallel to each other, but placed at a considerable angle. The axis of the brim will be represented by a line drawn from near the umbilicus, downwards and backwards, to the coccyx; that of the outlet, by a line drawn from the orifice of the vagina to the first bone of the sacrum. The precise points, however, which these lines will touch, must vary a little, according to the conformation and obliquity of the pelvis, and the prominence of the abdomen. Each different part of the cavity of the pelvis has its own proper axis, and the line of motion of the child's head must always correspond to the axis of that part of the pelvis in which it is placed. A pretty good idea of this subject with regard to labour may be obtained by placing a small catheter, of the usual curvature, in the axis of the brim, and making its extremity pass out at the axis of the outlet.

CHAP. V.

Of the Head of the Child, and its progress through the Pelvis in Labour.

§ 1. BONES OF THE HEAD.

The head of the child is made up of many different bones, and those of the cranium are very loosely connected together with membrane. The frontal, temporal, parietal, and occipital bones, compose the bulging part of the cranium and their particular shape regulates the direction of the sutures. The occipital bone is connected to the parietal bones, by the lambdoidal suture, which is readily discovered through the integuments, by its angular direction. The parietal bones are joined to the frontal bone, by the coronal suture, which is distinguished by its running directly across the head, and they are connected to each other by the sa-

gital suture, which runs in a direct line from the occipital, to the frontal bone; as the os frontis, in the fœtus, consists of two pieces, it can sometimes be easily traced with the finger, even to the nose. Let the sagital suture be divided into three equal parts. From the middle one which I call the *central portion*, a line or band may be drawn to the lateral part of the lower jaw, and which will traverse the parietal protuberance, and the external ear. As this, in labour, is parallel to the axis of the brim of the pelvis, until the head makes its turn, I call it the *line of axis*. The upper and anterior angles of the parietal bones, and the corresponding corners of the two pieces of the frontal bone, are rounded off, so as to leave a quadrangular vacancy, which is filled up with tough membrane. This is called the great, or anterior fontanell, to distinguish it from another smaller vacancy at the posterior extremity of the sagital suture, which is called the small fontanell. The first is known by its four corners, and by its extending forward a little betwixt the frontal bones, and whenever it is felt, in an examination, we may expect a tedious labour; for the head does not lie in the most favourable position. The little fontanell cannot, during labour, be perfectly traced, as it is lost in the angular lines of the lambdoidal suture, which, however, ought to be readily discovered. The head is of an oblong shape, and its anterior extremity at the temples is narrower than the posterior, which bulges out at the sides by a rising of the parietal bones, called the parietal protuberances: from these the bones slope backwards, like an obtuse angle, to the upper part of the occiput, which is a little flattened, and is called the vertex. The general shape of the back part is hemispherical. From these protuberances, the head also slopes downwards and forwards to the zygomatic process of the temporal bone, becoming, at the same time, gradually narrower.

§ 2. SIZE OF THE HEAD.

The longest diameter of the head is from the vertex to the chin, and this is near five inches.(*i*) From the root of the nose to the

(*i*) This is termed the oblique diameter, to distinguish it from the next. When the vertex is stretched out in laborious births, it is sometimes extended to six or seven inches.

vertex, [which is called the long diameter,] and from the chin to the central portion of the sagital suture, measures four inches. From the one parietal protuberance to the other, [which is called the transverse diameter,] a transverse line measures from three inches and a quarter, to three inches and a half. From the nape of the neck to the crown of the head, is three inches and a half, [and is called the perpendicular diameter.] From the one temple to the other is two inches and a half. From the occiput to the chin, along the base of the cranium, is four inches and a half. From one mastoid process to the other, along the base, is about two inches; from cheek to cheek is three inches. Although these may be the average dimensions of the head, yet, owing to the nature of the sutures, they may be diminished, and the shape of the head altered. The one bone may be pushed a little way under the other, and, by pressure, the length of the head may be considerably increased, whilst its breadth is diminished; but these two ı erations by no means correspond, in a regular degree, to each other.

The size of the male head is generally greater than that of the female. Dr. Joseph Clarke,* an excellent practitioner, upon whose accuracy I am disposed fully to rely, says, that it is a twenty-eighth or thirtieth part larger. It is a well established fact, that owing to the greater size of male children, women who have the pelvis in any measure contracted, have often a more tedious labour, when they bear sons than daughters; and many who have the pelvis well formed, suffer from the effects on the soft parts. Dr. Clarke supposes, that one-half more males than females are born dead, owing to tedious labour, or increased pressure on the brain; and owing to these causes, a greater number of males than females die, soon after birth. In twin cases, again, as the children are smaller, he calculates that only one-fifth more males than females are still-born. Dr. Bland† says, that out of eighty-four still-born children, forty-nine were males, and thirty-five, females.

* Phil. Trans. Vol. LXXVI.

† Phil. Trans. Vol. LXXI.

§ 3. PASSAGE OF THE HEAD.

By comparing the size of the head with the capacity of the pelvis, it is evident that the one can easily pass through the other. But I apprehend that the comparison is not always correctly made, for the child does not pass with the long diameter of its cranium parallel to a line drawn in the direction of the long diameter of the brim of the pelvis; but it descends obliquely, so that less room is required. The central portion of the sagital suture passes first, the chin being placed on the breast of the child. Now, the length of a line drawn from the nape of the neck, to the crown of the head, is three inches and a half; a line intersecting this, drawn from the one parietal protuberance to the other, measures no more. We have, therefore, when the head passes in natural labour, a circular body going through the brim, whose diameter is not above three inches and a half; and therefore, no obstacle or difficulty can arise from the size of the pelvis. There is so much space superabounding betwixt the pubis and sacrum, as to prevent all risk of injury from pressure on the bladder, urethra, or rectum; and as the long diameter of the head is descending obliquely, the sides of the brim of the pelvis are not pressed on. This is so certainly the case, that the head may, and actually often does pass, without any great additional pain or difficulty, although the capacity of the pelvis be a little contracted. But when the shoulders, which measure five inches across, come to pass, then the brim is completely occupied. If, however, any contraction should take place in the lateral diameter, the child would still pass, the one shoulder descending obliquely before the other.

It is of great consequence to understand the passage of the child's head in natural labour: for upon this depends our knowledge of the treatment of difficult labour. The head naturally is placed with the vertex directed to one side, or a little towards the acetabulum, and the forehead, owing chiefly to the action of the promontory of the sacrum, is turned in the same degree towards the opposite sacro-iliac junction. When labour begins, and the head comes to descend, the chin is laid on the sternum, and the central

portion of the sagital suture is directed downwards, nearly in the axis of the brim of the pelvis. When, by the contraction of the uterus, the head is forced a little lower, its apex comes to touch the plane of the ischium. Upon this the posterior sloping part of the parietal bone slides downwards and forwards, as on an inclined plane, the head being turned gradually, so that, in a little time, the face is thrown into the hollow of the sacrum,* and the vertex presents at the orifice of the vagina. This is not fully accomplished, till the cranium has got entirely into the cavity of the pelvis. As the basin is shallow at the pubis, the head is felt near the orifice of the vagina, and even touching the labia and perineum, before the turn is completed, and when the ear is still at the pubis. The whole of the cavity of the pelvis, is so constructed, as to contribute to this turn, which is further assisted by the curve of the vagina, and the action of the lower part of the uterus, on the head of the child. The head, whilst its long diameter lies transversely, continues to descend in the axis of the brim of the pelvis; but when it is turned, it passes in the axis of the outlet. When the turn is making, the direction of the motion is in some intermediate point; and this fact should, in operating with instruments, be studied and remembered. When the pelvis is narrow above, and the sacrum projects forward, the hemispherical part of the head is long of reaching the inclined plane of the ischium; and when the head is lengthened out, so as to come in contact with it, we find, that although the projection of the sacrum directs the vertex sometimes prematurely a little forward, yet, the tendency to turn fully, is resisted by the situation of the bones above; a great part of the cranium, and all the face, being above the brim, and perhaps in part locked in the pelvis. By a continuation of the force, the shape of the head may be altered; even the vertex may be turned a little to one side, its apex not corresponding exactly to the extremity of the long diameter of the head; the integuments may be tumefied, and a bloody serum be effused between them, so as greatly to disfigure the presentation. As, therefore, in

* Dr. Osborn attributes this turn to the action of the spines of the ischia on the two parietal bones, but not on opposite spots.

tedious labour, occasioned by a deformed pelvis, the skull may be much lengthened and misshapen, we are not to judge of the situation of the head, by the position of the apex of the tumour which it forms; but we must feel for the ear, which bears a steady relation to that part of the head which presents the obstacle. The back and upper part of the head are compressible, but the base of the skull and the face are firm. A line drawn from the neck to the forehead, passing over the ear, is to be considered as the boundary betwixt these parts of opposite character; and therefore we attend to the relative situation of the ear, as it ascertains both the position of the head, and its advancement through the brim.

CHAP. VI.

Of Diminished Capacity, and Deformity of the Pelvis.

§ 1. DEFORMITY FROM RICKETS.

The pelvis may have its capacity reduced below the natural standard in different ways. It may be altogether upon a small scale, owing to the expansion stopping prematurely, the different bones, however, being well-formed, and correct in their relative proportions and distances. This may occasion painful labour, but rarely causes such difficulty as to require the use of instruments. Sometimes the bones are all of their proper size, but the sacrum is perfectly straight, by which, although both the brim and outlet are sufficiently large, yet the cavity of the pelvis is lessened; or when all the other parts are natural, the spines of the ischium may be exuberant, encroaching on the lower part of the pelvis.

Another cause of diminished capacity is the disease called rickets, in which the bones in infancy are defective in their strength, the proportion of earthy matter entering into their composition being too small. In this disease, the long bones bend, and their extremities swell out; the pelvis becomes deformed, the back part approaching nearer to the front, and the relative distance

of the parts being lost. The distortion may exist in various degrees. Sometimes the promontory of the sacrum only projects forward a very little more than usual, or is directed more to one side than the other;* and the curvature of the bone may be either increased or diminished. If the sacrum project only a little, without any other change, the capacity of the brim alone is diminished: but if the curvature be at the same time smaller than usual, the cavity of the pelvis is lessened: but unless the ischia approach nearer together, or the lower part of the sacrum be bent forward, the outlet is unaffected; and in most cases of moderate deformity the outlet is not materially changed. In greater degrees of the disease, the anterior part of the brim becomes more flattened, the linea ilio-pectinea forming a small segment of a pretty large circle. The sacrum forms part of a concentric circle behind; and thus the brim of the pelvis, instead of being somewhat oval, is rendered semicircular or crescentic, and its short diameter is sometimes reduced under two inches. The promontory of the sacrum may either correspond to the symphysis pubis, or may be directed to†

* It is not necessary to give examples of every degree of deformity; but it will be useful to select some specimens of the different kinds. The slighter degrees do not require to be particularized. I shall first of all give the dimensions of a dried pelvis, so contracted, as to prevent a child at the full time from passing without assistance. From the pubis to the sacrum, it measures three inches; from the acetabulum to the sacrum, on the right side, two and a half inches; on the left, two inches and seven-eighths; from the brim above the foramen thyroideum, to the opposite sacro-iliac junction, five inches; from the same part of the brim on one side, to the same on the opposite, three inches and a half; transverse diameter, four inches and seven-eighths; from the arch of the pubis to the hollow of the sacrum, five inches; from one tuberosity of the ischium to the other, four inches and a half; from one spine to another, four inches and a half; the arch of the pubis is natural. The distance from the face of the third lumbar vertebra, to the spine of the ilium on both sides, is six inches. These dimensions may be compared with those of the well-formed pelvis. The symphysis pubis has the cartilage in the inside, projecting like a spine, which added to the smallness of the pelvis when recent. The linea ilio-pectinea also, on the left side, is for the length of two inches as sharp as a knife; and from these two causes, the cervix uteri and bladder were torn in labour.

† In a pelvis of this kind, which I shall describe, the vertebræ and sacrum lean much to the left side. The line from the promontory of the sacrum to the part of the pubis opposite it, is barely an inch and a half; but an oblique line drawn

one side, rendering the shape of the brim more irregular and the dimensions smaller on one side than the other. In some instances, the shape of the brim is like an equilateral triangle; and although the diameter from the pubis to the sacrum be not diminished, yet the acetabula being nearer the sacrum, the passage of the head is obstructed.

§. 2. DEFORMITY FROM MALACOSTEON.

The pelvis is likewise, especially in manufacturing towns, sometimes distorted by malacosteon, or softening of the bones of the adult. This is a disease which sometimes begins soon after delivery, and very frequently during pregnancy. It is, indeed, comparatively rare in those who do not bear children, and it is always increased in its progress by gestation. It must be carefully attended to, for, to a negligent practitioner, it has at first very much the appearance of chronic rheumatism. It generally begins with pains about the back, and region of the pelvis. These pains are almost constant, or have little remission. They are attended with increasing lameness, loss of flesh, weakness, and fever; but the distinguishing mark is diminution of stature, the person gradually becoming decrepid. In malacosteon the pelvis suffers, but the distortion is generally different from that produced by rickets; for whilst the top of the sacrum sometimes sinks lower in the pelvis,

to the symphysis, which is to the right of the promontory, is near two inches. From the promontory to the side of the brim at the ilium on the left side, is two inches and three-tenths; on the right side, three inches and four-tenths. On the left side, from the lateral part of the sacrum to the acetabulum, is nine-tenths of an inch; on the right side, fully two inches. Now in this pelvis, when the soft parts are added, we shall find that an oval body may pass on the right side, whose long diameter is three inches and a half, and whose short diameter is barely two inches.

In a pelvis with a semicircular brim, whose short diameter, at the middle and each side, is one inch and a half, an oval could pass when the soft parts are added, whose long diameter is about two inches and a quarter; and the short one about one inch and a quarter.

and always is pressed forward,* the acetabula are pushed backwards and inwards towards the sacrum and towards each other ;† so that, were it compatible with life, for the disease to last so long, these parts would meet in a common point, and close up the pelvis, or at least convert its cavity to three slits. The ossa pubis form a very acute angle ; so that the brim of the pelvis, instead of being a little irregular as in slight cases of rickets, or semicircular as in the greatest degree of that disease, consists, when malacos-

* In a well-formed pelvis, a line drawn transversely along the brim, and in contact with the sacrum, either touches at its two extremities, the sacro-iliac junctions or the linea ilio-pectinea, about half an inch before them ; but in a very deformed pelvis, such a line will touch the brim, at, or even before the acetabula. In a well-formed pelvis, a line drawn from the middle of the linea ilio-pectinea on one side, to the same spot on the opposite side, is about an inch, or an inch and a half distant from the sacrum. But in a deformed pelvis, this line would either pass through the sacrum, or altogether behind it.

† The following are the dimensions of a pelvis of this kind, which I select as a specimen. From the spinous process of the ilium on one side to the other, is eight inches and three-fourths. From the lumbar vertebræ to the spinous process of the ilium on the right side, six inches ; on the left side, one inch and seven-eighths. From the spinous process of the ilium back to its ridge, two inches and a half From the symphysis pubis to the sacrum, one inch and three-fourths. From the right acetabulum to the sacrum, six-tenths of an inch ; from the left, seven-eighths of an inch. From the brim above the foramen thyroideum to the same point on the opposite side, seven-eighths of an inch. From the same part of the brim to the opposite sacro-iliac junction, three inches and a half on both sides. From the tuberosity of one ischium to that of the other, two inches and a half. From the tuberosity to the coccyx, three inches. From the spine of one ischium to that of the other, three inches and a half. From the lower part of the symphysis pubis to the hollow of the sacrum, four inches ; distance of the rami of the pubis, five-eighths of an inch.

This pelvis has a triangular brim ; for it will be observed, that the brim above the foramen thyroideum measures nearly an inch across, and therefore there is a considerable space betwixt the two ossa pubis, gradually, however, becoming narrower toward the junction of the bones ; but little advantage in delivery can be gained from this. When we examine it with a view to determine what bulk may be brought through the brim, we find that it is by its shape virtually divided into two cavities, one on the right, and the other on the left side, and the short diameter of the one is six-tenths of an inch, and that of the other seven-eighths of an inch ; therefore no art can bring a child at the full time through it.

In this pelvis, the sacrum has fallen so forward at the top. that in a standing posture the face of that bone is almost horizontal, and its under part with the coccyx is bent forward like a hook. The vertebræ are much distorted.

teon has continued long, of two oblong spaces on each side of the sacrum, terminating before, in a narrow slit, formed betwixt the ossa pubis.* In this narrow space, when the woman is advanced in her pregnancy, the urethra lies, and the bladder rests upon the pendulous belly; so that, if it be necessary to pass the catheter, we must sometimes use one made of elastic materials, or a male catheter, directing the concavity of the instrument towards the pubis. If the instrument be large, and the ossa pubis very near each other, it may be jammed betwixt them, if it be incautiously introduced. In this disease, as well as in rickets, it is to be remembered, that the promontory of the sacrum may overhang the contracted brim, so as more effectually to prevent the head from entering it.

Rickets being a disease, which is at its greatest height in infancy, we have not at present to consider the treatment. Malacosteon is, on the contrary, a disease of the adult; and it would be of great importance to child-bearing women, to know how to check its progress. But the means capable of doing this with any tolerable degree of certainty, have not yet been discovered. As gestation uniformly increases the disease, it is proper that the woman should live *absque marito*. As there is evidently a deficiency of earth in the bones, it has been proposed to give the patient phosphate of lime, but little advantage has been derived from it; and indeed, unless we can change the action of the vessels, it can do no good to prescribe any of the component parts of bone. We have, in the present state of our knowledge, no means of rendering the action more perfect, otherwise than by endeavouring to improve the general health and vigour of the system, by the use of tonics, the

* This is the case in a pelvis where the distance from the part of the brim above the foramen thyroideum on one side, across to the same part on the opposite side, is only five-eighths of an inch. From the right acetabulum to the sacrum is an inch and three-eighths. From the left is one inch. This pelvis at the brim is externally triangular, but it is from the near approximation of the bones, virtually semicircular, the space betwixt the two ossa pubis being so trifling as not to merit consideration; and the diameter of the brim here is one inch, exclusive of the small slit betwixt the bones. The sacrum in this pelvis is very much curved, and the outlet is small.

cold bath, and attending to the state of the bowels. Anodyne frictions, and small blisters, sometimes relieve the pain.*(k)

§ 3. DEFORMITY FROM EXOSTOSIS AND TUMOURS.

The pelvis may be well formed externally, and yet its capacity may be diminished within, by exostosis from some of the bones; or it may be affected in consequence of the fracture of the acetabulum, from which I have seen extensive and pointed ossifications stretch for nearly two inches into the pelvis; or steatomatous or schirrous tumours may form in the pelvis, being attached to the bones or ligaments, of which I have known examples.† An enlarged ovarium,‡ or vaginal hernia,§ may also obstruct delivery,

* Upon the subject of deformity of the pelvis, and for tables of many particular instances of distortion, I have great pleasure in referring the reader to the works of Dr. Hull, a practitioner of sound judgment, and extensive knowledge.

(k) Deformity of the pelvis, from the above causes, may be considered as comparatively a rare disease in the United States. In the course of my obstetrical practice, I can at present recollect very few cases, where embryulcia and the employment of the crotchet became *indispensably* necessary; and what may be worthy of remark, these were in individuals natives of Europe, chiefly of Ireland. A deformed pelvis is scarcely known among the aborigines of our country. This subject shall again be taken up when embryulcia is treated of; an operation, which we fear, is frequently resorted to very *unnecessarily* at least, to make use of the mildest term.

† Dr. Denman mentions a fatal case of this kind, to which Dr. Hunter was called. The child was delivered by the crotchet, but the patient died on the fourth day. A firm fatty excrescence, springing from one side of the sacrum was found to have occasioned the difficulty. Vide Introd. Vol. II. p. 72.—Baudelocque, in the 5th vol. of Recueil Periodique, relates a case, where, in consequence of a schirrous tumour adhering to the pelvis the crotchet was necessary. In a subsequent labour, the cæsarean operation was performed, and proved fatal to the mother.—Dr. Drew records an instance where the tumour adhered to the sacro-sciatic ligament, and was successfully extirpated during labour. It was 14 inches in circumference. Vide Edin. Journal, Vol. I. p. 23.

‡ A fatal case of this kind occurred to Dr. Ford, and is noticed by Dr. Denman. Another fatal instance is recorded by M. Baudelocque, L'Art, section 1964. See also a case by Dr. Merriman, Med. and Chir. Trans. III. 47. This ovarium contained a fluid, and probably might have been opened during labour with advantage.

§ Several cases of this kind have been met with, and in one related by M. Brand, and noticed by Dr. Sandifort in his Obs. Anat. Path. the woman died undelivered.

even so much as to require the crotchet; and therefore, although they be not indeed instances of deformed pelvis, yet as they diminish the capacity of the cavity, as certainly as any of the former causes which I have mentioned, it is proper to notice them at this time.* Enlarged glands in the course of the vagina, polypous excrescences about the os uteri or vagina, schirrus of the rectum, and firm encysted tumours in the pelvis, may likewise afford an obstacle to the passage of the child. Some tumours, however, gradually yield to pressure, and disappear until the child be born; others burst, and have their contents effused in the cellular substance. A large stone in the bladder may also be so situated during labour, as to diminish very much the cavity of the pelvis; and it may be even necessary to extract the stone before the child be delivered.

Tumours in the pelvis are produced either by enlargement of some of its contents, as for instance the ovarium or glands; or, by new formed substances. The ovarian kind are often moveable, the other generally fixed; and they may consist of fatty, or fibrous substance, or fluid contained in a cyst. These have only cellular attachments, and are removed easily by making an incision through the vagina, and turning out the tumour, or evacuating its contents;† other tumours are cartilaginous, and these, instead of being connected only by cellular matter, are attached to the pelvis firmly, or grow from it. They adhere either by a pedicle, or by an extensive base. In the first case the tumour is more moveable than in the second, where the fixture is firmer. These can only be extirpated by cutting deeply into the cavity of the pelvis, and the incision requires to be made through the perineum and levator ani,

* In all cases of moveable tumours, as well as in stone in the bladder, it is evident, that they ought, in the very beginning of labour, to be pushed above the brim, and prevented from entering it before, or along with the head.

† M. Pelletan details several cases of tumours within the pelvis, some of them fatty or fibrous, and easily turned out, merely by making an incision over them, through the vagina; one encysted containing puriform matter; and one about an inch long, of a cartilaginous nature, adhering to the descending branch of the pubis, the vagina being divided, it was cut off with scissors. Clinique Chirurgicale, Tom. I. 203, 206, 224, 228, 250. Mr. Park likewise relates several cases, chiefly of tumours containing liquid, or soft contents, and which were pierced from the vagina during labour. Med. Chir. Trans. II. 293.

like the incision in the operation of lithotomy in the male subject. We are much indebted to Dr. Drew for the first case of an operation of this kind; and as the tumour adhered by a neck, it was easily cut off, and the success was complete.*

In a dreadful case which I met with some years ago, the attachments were extensive, and the tumour so large as to fill the pelvis, and permit only one finger to be passed between it and the right side of the basin. It adhered from the symphysis pubis round to the sacrum, being attached to the urethra, obturator muscle, and rectum; intimately adhering to the brim of the pelvis, and even overlapping it a little towards the left acetabulum. It was hard, somewhat irregular, and scarcely moveable. The patient, Mrs. Broadfoot, was in the 9th month of pregnancy. There was no choice, except between the cæsarean operation, and the extirpation of the tumour. The latter was agreed on; and with the assistance of Messrs. Cowper and Russel, I performed it on the 16th of March, a few hours after slight labour pains had come on. An incision was made on the left side of the orifice of the vagina, perineum, and anus, through the skin, cellular substance, and transversalis perinei. The levator ani being freely divided, the tumour was then touched easily with the finger. A catheter was introduced into the urethra, and the tumour separated from its attachments to that part. It was next separated from the uterus, vagina, and rectum, partly by the scalpel, partly by the finger. I could then grasp it as a child's head, but it was quite fixed to the pelvis. An incision was made into it with the knife, as near the pelvis as possible; but from the difficulty of acting safely with that instrument, the scissors, guided with the finger, were employed when I came near the back part; and instead of going quite through, I stopped when near the posterior surface, lest I should wound the rectum, or a large vessel, and completed the operation with a spatula. The tumour was then removed, and its base or attachment to the bones dissected off as closely as possible. Little blood was lost. The pains immediately became strong, and before she was laid down in bed they were very pressing. In four hours she was

* Vide Edin. Med. & Surg. Journal, vol. 1. p. 20.

delivered of a still born child, above the average size. Peritoneal inflammation, with considerable constitutional irritation, succeeded; but by the prompt and active use of the lancet and purgatives, the danger was soon over, and the recovery went on well. In the month of May the wound was healed. On examining per vaginam, the vagina was felt adhering as it ought to do, to the pelvis, rectum, &c. The side of the pelvis was smooth; and a person ignorant of the previous history of the case, or who did not see the external cicatrix, could not have discovered that any operation had been performed. After a lapse of more than five years, she still continues well, but has never been pregnant.

The practical remarks which I would offer on this subject, are,

1st. That whenever the tumour is moveable, it ought to be pushed above the brim of the pelvis in the commencement of labour, and prevented from again descending before the child's head.

2d. That on a principle to be hereafter more fully inculcated, we ought never to permit the labour to be long protracted, but should early resort to means for relief. By a contrary conduct the child indeed may be ultimately expelled by nature, or be brought away by art, but the mother is in great danger of perishing, either from subsequent inflammation or exhaustion.

3d. As it is impossible to decide with certainty on the nature or contents of many of these tumours, we ought, in all cases where we cannot push them up, to try the effect of puncturing with a trocar. If the contents be fluid, we evacuate them more or less completely; if solid, we find that the canula, on being withdrawn, is empty, or filled with clotted blood; if fatty, or cheesy, the end of the tube retains a portion; and we are thus informed of its nature.

4th. When the size of the tumour cannot be sufficiently, or considerably diminished by tapping, I am inclined, from the unfavourable result of cases where the perforator has been used, and from the severe and long continued efforts which have been required to accomplish delivery, to recommend the extirpation of the tumour, rather than the use of the crotchet; and this may be accomplished best and most safely by the mode adopted in the

case of Mrs. Broadfoot. There may, however, be situations where this incision ought to be made in the vagina; but these are rare. But extirpation cannot in any mode be proposed, if firm cohesions have been contracted between the tumour and vagina or rectum.

5th. If the extensive connections, extent, or nature of the tumour, or danger from hemorrhage, prohibit extirpation, or the patient will not submit to it, and if it have been early ascertained that tapping is ineffectual, I deem it an imperative duty to urge the perforation of the head, or extraction of the child, as soon as the circumstances of the case will permit.

6th. Much and justly as the cæsarean operation is dreaded, it may with great propriety be made a question, whether in extreme cases, that would not be less painful and less hazardous, to the mother, than those truly appalling sufferings which are sometimes inflicted by the practitioner for a great length of time, when the crotchet is employed; whilst it would save the child, if alive at the time of interference. I am aware that it may be objected to this opinion, that in those cases, the tumour being softer than bone, the same injury will not be sustained as if the soft parts had been pressed with equal force, and for the same time, against the bones of a contracted pelvis, and that in point of fact, recovery has taken place, although the strength of two able practitioners was exerted and exhausted during several hours; but such an instance cannot establish the general safety of the practice.

7th. It is scarcely necessary for me to add, that there may be inferior degrees of encroachment, which admit of the safe and successful application of the forceps; and of this matter we judge by the size of the tumour, and capacity of the pelvis. It will hereafter be explained that a very small degree of obstruction may retard delivery, rather by influencing the action of the uterus, than by the mechanical resistance opposed.

§ 4. MEANS OF ASCERTAINING THE SIZE OF THE HEAD.

In order to ascertain the degree of deformity, and the capacity of the pelvis, different instruments have been invented. Some of

these are intended to be introduced within the pelvis, and others to be applied on the outside, deducting in the latter case, three inches for the thickness of the pubis, sacrum, and soft parts. If the finger, or any instrument, be carried from the arch of the pubis, to the top of the sacrum, about half an inch is to be deducted from the measured distance, on account of the obliquity of the line. But these methods are so very uncertain, that I do not know any person who makes use of them in practice. The hand is the best pelvimeter, and must in all cases, where an accurate knowledge is necessary, be introduced within the vagina. By moving it about, and observing the number of fingers which can be passed into different parts of the brim, or the distance to which two fingers require to be separated in order to touch the opposite points of the brim, or the space over which one finger must move in order to pass from one part to another, we may obtain a sufficient knowledge, not only of the shape of the brim, cavity, and outlet of the pelvis, but also of the degree to which the soft parts within are swelled, as well as of the position and extent of any tumour which may be formed in the pelvis. We may be further assisted by observing, that in great degrees of deformity or contraction, the head does not enter the brim at all; in smaller degrees it engages slowly, and the bones of the cranium form an angle more or less acute, according to the dimensions of the brim into which it is squeezed.

As in many cases of deformed and contracted pelvis, it is necessary to break down the head in order to get it through the cavity, it will be proper to subjoin the dimensions of the fœtal head when it is reduced to its smallest size. When the frontal, parietal, and squamous bones are removed, which is all that we can expect to be done in a case requiring the crotchet, we find that the width of the base of the cranium, over the sphenoid bone, is two inches and a half. The distance from cheek to cheek is three inches. From the chin to the root of the nose is an inch and a half; and by separating the symphysis of the jaw, the two sides of the maxilla may recede, so as to make this distance even less. From the chin to the nape of the neck, when the chin is placed on the breast, is two inches and three quarters. When, on the contrary, the chin is raised up, and the triangular part of the occiput laid back on the

neck, the distance from the throat to the occiput is two inches. The smallest part of the head, then, which can be made to present, is the face; and when this is brought through the brim, the back part of the head and neck may, although they measure two inches, be reduced by pressure so as to follow the face. The short diameter of the chest when pressed is an inch and a half; that of the pelvis is the same. The diameter of the shoulder is one inch.

CHAP. VII.

Of Augmented Capacity of the Pelvis.

A VERY large pelvis,* so far from being an advantage, is attended with many inconveniences, both during gestation and parturition. The uterus, in pregnancy, does not ascend at the usual time out of the pelvis, which produces several uneasy sensations; it is even apt, owing to its increased weight, to be prolapsed: or, if the bladder be distended, it may readily be retroverted. At the very end of gestation, the uterus may descend to the orifice of the vagina; and, during labour, forcing pains are apt to come on before the os uteri be properly dilated, by which both the child and the uterus may be propelled, even out of the vagina; and, in many instances, although this should not happen, yet the pains are severe and tedious, especially if the practitioner be not aware of the nature of the case.

* The following are the dimensions of a very large pelvis which I possess. The conjugate diameter is four inches and three fourths; the lateral, five inches and five eighths; the diagonal, five inches and a half. From the symphysis pubis to the sacro-iliac junction, five inches. From the top of the arch of the pubis to the sacrum, is five inches and three eighths. From one tuberosity of the ischium to the other, is five inches and a half; and the arch is very wide. Depth of the pelvis at the sacrum without the coccyx, five inches. Breadth of the sacrum at the top, four inches and seven eighths. Depth of the pelvis at the sides, four inches.

CHAP. VIII.

Of the External Organs of Generation.

§ 1. GENERAL VIEW.

The symphysis of the pubis, and insertion of the recti-muscles, are covered with a very considerable quantity of cellular substance, which is called the mons veneris. From this the two external labia pudendi descend, and meet together about an inch before the anus; the intervening space receiving the name of perinæum. On separating the great labia, we observe a small projecting body placed exactly on the lower part of the symphysis. This is the clitoris, and it is surrounded by a duplicature of skin called its prepuce. From this duplicature, or rather from the point of the clitoris, we find arising on each side, a small flap, which is continued down on the inside of the labia, to the orifice of the vagina. These receive the name of nymphæ, or labiæ minores or interiores. On separating them, we observe, about nearly an inch below the clitoris, the extremity of the urethra; and, just under it, the orifice of the vagina, which is partly closed up, in the infant state, by a semilunar membrane, called the hymen. These parts are all comprehended under the general name of vulva, or external organs of generation.

§ 2. LABIA AND NYMPHÆ.

The labia have nothing peculiar in their structure, for they are merely duplicatures of the skin, rendered prominent by a deposition of fatty matter. Externally they have just the appearance of the common integuments; and at the age of puberty, are, together with the mons veneris, generally covered with hairs. Internally they resemble the inside of the lips or eye-lids, and are furnished with numerous sebaceous glands. They are placed closer

together below than above; and at their junction behind, a small bridle called the fourchette, extends across, which is generally torn whenever a child is born.

The nymphæ at first appear to be merely duplicatures of the inner surface of the labia, but they are, in fact, very different in their structure. They are distinct vascular substances inclosed in a duplicature of the skin. When injected by filling the pudic artery, each nympha is found to be made up of innumerable serpentine vessels, forming an oblong mass. This at the upper part joins the clitoris, to which, perhaps, it serves as an appendage; whilst the loose duplicature of skin in which it is lodged, by being unfolded, permits the labia to be more safely and easily distended, during the passage of the child.

§ 3. CLITORIS.

The clitoris is a small body, resembling the male penis, but has no urethra. It consists of two corpora cavernosa, which arise from the rami of the ischia and pubis, and unite at the symphysis of the pubis. These are furnished with two muscles analogous to the erectores penis of the male. When the crura and nymphæ are filled with wax, we find on each side, two vascular injected bodies, one of them in close contact with the bones, the other more internal with regard to the symphysis of the pubis. When the one is injected, the other is injected also, and both are connected together at the upper part. The clitoris, formed by the junction of its crura, is apparently about the eighth part of an inch long, a part of it not being seen, and it is supported by a pretty strong suspensory ligament which descends from the symphysis. When distended with blood, it becomes erected and considerably longer, and is endowed with great sensibility.

§ 4. URETHRA.

On separating the nymphæ, we find a smooth hollow or channel, extending down from the clitoris for nearly an inch; and at the termination of this, and just above the vagina, is the orifice of the

urethra, which although not one of the organs of generation, deserves particular attention. The bladder is lodged in the fore part of the pelvis, immediately behind the symphysis pubis; but when distended, it rises up, and its fundus has been known to extend even to the umbilicus. The urethra is the excretory duct of the bladder; it is about an inch and a half long, and passes along the upper part of the vagina, through which it may be felt like a thick fleshy cord. The structure of the urethra is extremely simple, for little can be discovered except a continuation of the internal coat of the bladder, covered with condensed cellular substance. On slitting up the canal, numerous mucous lacunæ may be discovered in its course, and two of these at the orifice are peculiarly large. The urethra is very vascular, and, when injected and dried, its orifice is perfectly red. In the unimpregnated state, it runs very much in the direction of the outlet of the pelvis; so that a probe, introduced into the bladder, and pushed on in the course of the urethra, would, after passing for about three inches and a half, strike upon the fundus uteri, and, if carried on for an inch and a half farther, would touch the second bone of the sacrum. The uterus being much connected with the bladder at its lower part, it follows, that when it rises up in pregnancy, the bladder will also be somewhat raised, and pressed rather more forwards, and the vagina being elongated, the urethra, which is attached to it, is also carried a little higher, and, in its course, is brought nearer the inside of the symphysis pubis. In those women who, from deformity of the pelvis, or other causes, have a very pendulous belly, the bladder, during pregnancy, is sometimes turned over the pubis, the urethra curved a little, and its opening somewhat retracted within the orifice of the vagina. When it is necessary to pass the catheter, it is of great consequence to be able to do it readily, and this is by no means difficult to do. The woman ought to be placed on her back, with her thighs separated, and the knees drawn a little up: a basin is then to be placed betwixt the thighs, or a bladder may be tied firmly to the extremity of the catheter to receive the urine. The instrument is then to be conveyed under the thigh, and the labia separated with the finger. The clitoris is next to be touched, and the finger run gently down the fossa that leads to the

orifice of the urethra, which is easily distinguished by its resemblance to an irregular dimple, situated just above the entrance to the vagina. The point of the instrument is to be moved lightly down the fossa after the finger, and it will readily slip into the urethra. It is then to be carried on in the direction of the axis of the outlet of the pelvis, and the urine drawn off. This operation ought always to be performed in bed, and the patient is never to be exposed. In cases of fractures, bruises, &c. where the woman cannot turn from her side to her back, the catheter may be introduced from behind without moving her. When the bladder is turned over the pubis, as happens in cases of great deformity of the pelvis, it is sometimes requisite to use either a flexible catheter, or a male catheter, with its concavity directed forward. When the uterus is retroverted, if we cannot use a female catheter, we may employ a gum catheter. When the head of the child in labour has entered the pelvis, the urethra is pushed close to the symphysis of the pubis; then the flexible or flat catheter must be introduced parallel to the symphysis, and the head of the child may be raised up a little with the finger. This, indeed, of itself, frequently permits the urine to flow; and when the urine is retained after delivery, it is often sufficient to raise up the uterus a little with the finger.

§ 5. ORIFICE OF VAGINA AND HYMEN.

The orifice of the vagina is situated nearly opposite to the anterior part of the tuberosity of the ischium, about an inch and a half below the symphysis of the pubis, and in the direction of the axis of the outlet of the pelvis. It is, in all ages, but more especially in infancy, considerably narrower than the canal itself, and is surrounded by a sphincter muscle, which arises from the sphincter ani, and is accompanied with a vascular plexus, called plexus retiformis. In children, it is always shut up by a membrane called the hymen, which consists of four angular duplicatures of the membrane of the vagina; the union of which may be discovered by corresponding lines on the hymen. At the upper part there is a semilunar vacancy, intended for the transmission of the menses.

Sometimes it is imperforated, or partially or totally absorbed. When the hymen is ruptured, it is supposed to shrivel into three or four small excrescences at the orifice of the urethra, called the carunculæ myrtiformes.(*l*)

Immediately below the orifice of the vagina, there is a short sinus within the labia, which extends farther back than the vagina. This has been called the fossa navicularis, and reaches to the fourchette.

CHAP. IX.

Of the Internal Organs of Generation.

§ 1. VAGINA.

The internal organs of generation consist of the vagina, with the uterus and its appendages.

The vagina is a canal which extends from the vulva to the womb. It consists principally of a spongy cellular substance, endowed with some elasticity, and having an admixture of indistinct muscular fibres. It is lined by a continuation of the cutis from the inner surface of the labia; and this lining, or internal coat, forms numerous wrinkles, or transverse rugæ, on the anterior and posterior sides of the vagina. They are peculiar to the human female, and are most distinctly seen in the virgin state; but after the vagina has been distended, they are more unfolded, and sometimes the surface is almost smooth. In the whole course of this coat, may be observed the openings of numerous glandular follicles, which secrete a mucous fluid. In the fœtus this is white and milky; in the adult it is nearly colourless. The vagina is very vascular; and when the

(*l*) Haller, in his Elementa Physiologiæ, asserts that the hymen is peculiar to the female of the human species; but Duverney, in a Memoir read before the Institute and the School of Medicine, at Paris, asserts, that it is common to others of the mammalia.

parts are well injected, dried, and put in oil of turpentine, the vessels are seen to be both large and numerous. Just below the symphysis pubis, we observe a great congeries of vessels surrounding the urethra and upper part of the vagina.

The vagina forms a curved canal, which runs very much in the course of the axis of the outlet and cavity of the pelvis. It is not round, but considerably flattened; it is wider above than below, being in young subjects much contracted about the orifice. At its upper part, it does not join the lips of the os uteri directly, but is attached a little above them, higher up behind than before, so that the posterior lip of the uterus is better felt than the anterior. In the infant, the vagina is attached still higher up, so that the lips of the uterus project in it something like a penis.

The inner coat of the vagina is reflected over the lips of the uterus, and passes into its cavity, forming the lining of the uterus. The junction of the uterus and vagina is so intimate, that we cannot make an accurate distinction betwixt them; but may say, that the one is a continuation of the other. The vagina adheres before very intimately to the urethra, behind, it comes gradually to approach to the rectum, and at its upper part it is pretty firmly connected to it. This union forms the recto-vaginal septum. These connections of the vagina are formed by cellular substance, there being only a very small part of its upper extremity covered with peritoneum.

When the finger is introduced into the vagina in situ, the urethra is felt on its fore part, resembling a firm fleshy cylinder. Behind, the rectum can be traced down to the point of the coccyx. At the side, the ramus of the ischium and of the pubis, together with the obturator internus muscle are to be distinguished. In a well-formed pelvis, the finger cannot easily reach beyond the lower part of the sacrum; during labour, however, the parts being more relaxed, the bone may be felt more easily, but its promontory cannot be touched with the finger.

§ 2. UTERUS AND ITS APPENDAGES.

The uterus is a flat body somewhat triangular in its shape, being considerably broader at its upper than at its under part. It is scarcely three inches in length, about two inches broad above, and one below. It is divided by anatomists into the fundus or upper part, which is slightly convex, and lies above the insertion of the fallopian tubes; the cervix or narrow part below; the body, which comprehends all the space betwixt the fundus and cervix; and last of all, the os uteri, which is the termination of the cervix, and consists of a small transverse chink, the two sides of which have been called the lips of the uterus. The uterus contains a small cavity of a triangular shape, which opens into a narrow channel formed in the cervix, and is continued down to the os uteri. At the upper angles may be perceived the openings of the fallopian tubes. Both the cavity and the channel are lined with a continuation of the inner coat of the vagina, but it has a very different appearance from that which it exhibits in the vagina. The surface of the triangular cavity is smooth, and the skin which covers it is very soft and vascular. The surface of the cervical channel again is rugous, and the rugæ are disposed in a beautiful manner, so as to have some resemblance to a palm tree. This part is by no means so vascular as the cavity above; but it contains betwixt the rugæ several lacunæ, which secrete a mucous fluid. Where the cavity of the uterus terminates in the channel of the cervix, there is sometimes a slight contraction of the passage.

The substance of the uterus is made up of numerous fibres,*(m)* disposed very irregularly, and having a considerable quantity of interstitial fluid interposed, with many vessels ramifying amongst them. A dense succulent texture is thus formed, which constitutes the substance of the uterus. On cutting open the womb, we observe that its sides are about a quarter of an inch thick, but are rather thinner at the fundus, than elsewhere, though the difference is very trifling. Several irregular apertures may be perceived on

(m) The reader is referred to a very interesting paper "on the muscularity of the uterus, by Charles Bell, Esq. F. R. S. Ed. &c." published in the 5th vol. of the Eclectic Repertory, p. 37, and § 9.

the cut surface: these are the veinous sinuses. The fibres which we discover are muscular; but we cannot, in the unimpregnated state, observe them to follow any regular course.

The arteries of the uterus are four in number, with corresponding veins. The two uppermost arteries arise either high up from the aorta, or from the emulgent arteries. They descend, one on each side, in a serpentine direction behind the peritoneum, and are distributed on the ovaria, tubes, and upper part of the uterus. These are called spermatic arteries. The two lowermost, which are called uterine, arise from the hypogastric arteries. They run, one on each side, toward the cervix uteri, and supply it and the upper part of the vagina. Thus the fundus uteri is supplied by the spermatic arteries, and the cervix, by the uterine arteries; and these, from opposite sides, send across branches which communicate one with the other. But besides this distribution, the uterine artery is continued up the side of the uterus, and meets with the spermatic, so that, at the two sides, we have arterial trunks, from which the body of the uterus is liberally supplied with blood. The veins correspond to the arteries. The nerves of the uterus, like the blood-vessels, have also a double origin, and follow nearly the same course. Those which come from below are derived from the sacral nerves, especially from the fourth pair. Those from above come chiefly from the mesocolic plexus, and trunk of the intercostal. The renal plexus furnishes nerves to the ovarium.

The lymphatics, in the unimpregnated state of the uterus, are small, and not easily discovered. Those from the upper part of the womb, and from the ovaria, run along with the spermatic vessels, terminating in glands placed by the side of the lumbar vertebræ. Hence, in diseases of the ovaria, there may be both pain and swelling of the glands. But the greatest number of lymphatics run along with the uterine artery, several of them passing to the iliac and sacral glands, and some accompanying the round ligament. This may explain why, in certain conditions of the uterus, the inguinal glands swell. Others run down through the glands of the vagina; and hence, in cancer of the womb, we often feel those glands hard and swelled, sometimes to such a degree, as almost to close up the vagina.

The uterus is covered with the peritoneum, which passes off from its sides, to reach the lateral part of the pelvis, a little before the sacro-iliac symphysis; and those duplicatures, which, when the uterus is pulled up, seem to divide the cavity of the pelvis into two chambers, are called very improperly the broad ligaments of the uterus.

When the uterus is raised, and those lateral duplicatures of the peritoneum are stretched out, we observe, that at the upper part they form two transverse folds or pinions, one before and the other behind. In the first of these, the fallopian tubes are placed: in the second, the ovaria.

Besides these duplicatures, we likewise remark other two which extend from the sides of the fundus uteri to the linea iliopectinea at the side of the pelvis, and then run on to the groin. These contain, on each side, a pretty thick cord, which arises from the fundus uteri, and passes out at the inguinal canal, being then lost in the labia pudendi. These cords, which are called the round ligaments of the uterus, consist of numerous blood-vessels, some lymphatics, small nerves, and fibrous matter.

The fallopian tubes, in quadrupeds, are merely continuations of the horns of the uterus; but in the human female, they are very different in their structure from the womb. They appear to consist in a great measure, of spongy fibrous substance, which, as Haller observes, may be inflated like the clitoris. They are hollow, forming a canal of about three inches long, lined with a continuation of the internal coat of the uterus; and as they lie in the anterior pinion of the broad ligaments of the uterus, they are covered of necessity with a peritoneal coat. They originate from the upper corners of the uterine cavity by very small orifices, but terminate at the other extremity in an expanded opening with ragged margins, which are called the fimbriæ of the tube. The internal surface of the canal is plaited, the plicæ running longitudinally.

The ovaria* lie in the posterior pinion of the broad ligament. They are two oval flattened bodies, of a whitish colour, and glan-

* In birds, we find that the ovaria contain a great number of yolks of different sizes. Those which are nearest the wide canal called the oviduct which leads

dular consistence. They are cellular, but not very vascular, although vessels run to their coat. After puberty, they contain numerous minute vesicles, the largest of which are near the surface, and even form slight projections from it. These are the ova of the female, and are filled with a coagulable lymphatic matter. Their number is uncertain, but Haller says he never saw above fifteen in one woman. In old women they disappear or shrivel.

The ovarium is covered with the peritoneum; but when the ovum is impregnated and becomes prominent, the peritoneum

to the cloaca, are largest, whilst those remote from it are very minute. The full grown yolk is detached from the ovarium, and in its passage down is furnished both with the albumen and the necessary membranes and shell. In viviparous fishes, as the skate, ray, &c. the same structure obtains. These animals have two ovaria, containing eggs of different sizes; the smaller are white, the larger yellowish, and they pass down to an oviduct, which contains a glandular body that furnishes the covering of the egg. Each ovary has a separate oviduct, which forms a vast sac, that terminates in the sides of the cloaca, by orifices that have a duplicature like a valve. The cloaca itself forms an ample reservoir, that seems more like a continuation of the oviduct than the termination of the rectum. In oviparous fishes, the ovaria are known under the name of roes, and all the visible eggs are of the same size, and so numerous, that some contain above 200,000. They are enveloped in a fine transparent membrane; and septa from this envelope, divide the internal parts, and furnish points of attachment to the ova, which are expelled previous to fecundation. These are called oviparous fishes, and have, properly speaking, no oviduct. The ovaria of frogs resemble those of fishes, and the ova are, previous to expulsion, enveloped in a glary fluid. In the slug we find both testicles and ovaria. The ovarium is a grape-like tissue, containing numerous small grains, or ova, attached by pedicles, which are canals that lead into the oviduct. This is a serpentine canal, that after having adhered to the testicle, opens in the common cavity of generation, in which also the penis or duct from the testicle opens, and during copulation, the two individuals mutually impregnate each other. The ovaria of the adder are like strings of beads.

In many quadrupeds, the ovaria contain ova almost as distinct as some of those animals I have just noticed. The hedgehog has an ovarium like a bunch of grapes; and the ovarium of the civet has a knotted surface, and resembles a packet of little spheres: the ovarium of the didelphis is also vesicular. The common sow has also an ovarium somewhat resembling, externally, that of oviparous animals. Most other quadrupeds have an ovarium more smooth and somewhat oblong in shape, and in general the tube and ovarium are unconnected, as in the human female; but in the otter, my brother observed, that both were contained in a kind of capsule formed by the peritoneum, so that ventral extra uterine pregnancy cannot take place in this animal.

which covers it is absorbed, the ovum passes into the fallopian tube, and the little scar which remains on the surface of the ovarium, is called corpus luteum.*

In the fœtus, the ovaria and tubes are placed on the psoæ muscles; but in the adult, they lie loosely in the pelvis, and the uterus sinks within the cavity. The os uteri is directed forward, and the fundus backward, being in general found opposite to, or resting on, the second bone of the sacrum.

CHAP. X.

Of the Diseases of the Organs of Generation.

§ 1. ABSCESS IN THE LABIUM.

The labia are subject to several diseases: of these, the first which I shall mention, is phlegmonoid inflammation. This may occur at any period of life, and under various circumstances; but frequently it takes place in the pregnant state, especially about the sixth and seventh month of gestation. Sometimes it appears suddenly, and oftener than once in the same pregnancy. Occasionally it makes its attack in childbed in consequence of the violence which the parts may have sustained in labour. It is marked by the usual symptoms of inflammation, namely, heat, pain, throbbing, and more or less swelling, not unfrequently attended with fever. The swelling is sometimes hard and moveable, like a gland, especially when the progress is slower than usual. In general, the course of the disease is rapid, the pain and inflammation are at first very acute, and the part swells speedily. In a few hours, especially if a poultice have been applied, the abscess begins to point

* Sir E. Horne asserts, that the Corpora lutea exists previously to impregnation; and, in the virgin state, that they are solid, compact, glandular substances, in which the ovum is formed; and after the ovum is expelled, the blood which fills up the cavity is gradually absorbed, leaving a small cavity, which marks the place where the ovum had been. Vide Philos. Transact. years 1817 & 1819.

at the inside of the labium, and the nympha either disappears, or if it remain, it is pushed out of its place. Sometimes it bursts within thirty-six hours from its appearance. By means of cold saturnine applications, and gentle laxatives, the inflammation may perhaps be resolved, but most frequently it ends in suppuration, which is to be promoted by fomentations and warm cataplasms. If necessary, an opiate may be given to abate the pain, and a pillow must be placed between the knees, to keep the part from pressure. If possible, abscess ought not to be punctured; but, if the pain and tension be unbearable, we must indulge the patient by making a small opening; a good deal of blood will in this case come with the matter. After the abscess bursts, the parts may be dressed with any mild ointment. Should the opening of the abscess be higher than its bottom, it will be necessary, if the discharge continue,* to lay it open, after which it will speedily heal.

§ 2. ULCERATION OF THE LABIA.

The internal surface of the labia is often the seat of ulceration and excoriation, which may generally be avoided by the daily use of the bidet. The general form under which excoriation appears, is that of a raw surface, as if the cuticle had been peeled from a blistered part. Most frequently these sores are the consequence of acrimony, produced by inattention to cleanliness, especially in children; and in their case the labia, if care be not taken, may cohere. The treatment consists in keeping the parts clean, bathing the sore with a weak solution of the sulphate of zinc, and preventing cohesion. Should the parts not heal readily, they may be washed with brandy, or a very weak solution of nitrate of silver, or touched with caustic. When adhesion takes place, it may, if slight, be destroyed, by gently pulling the one labium from the other; if firmer, the parts must be separated with a knife. In either case, reunion must be prevented by washing the surface frequently with solution of alum, and applying a small piece of lint spread with simple ointment. Simple itching of the parts may be removed by

* Vide Mr. Hey's Surgical Observations, p. 188.

the tepid bath, a dose of castor oil, and fomenting the parts with milk and water.

Sometimes we meet with deeper ulcerations, which it is of great importance to the domestic happiness of individuals to distinguish from chancre. Nothing seems easier in a book, than to make the diagnosis, but in practice it is often very difficult. A well-marked chancre begins with circumscribed inflammation of the part; then a small vesicle forms, which bursts, or is removed by slough, and displays a hollow ulcer, as if the skin had been scooped away or nibbled by a small animal; its surface is not polished, but rough, and covered with pus, which is generally of a buff or dusky hue; the margins are red, and the general aspect of the sore is angry. But the most distinguishing character of the chancre is considered to be a thickening or hardness of the base and edges of the ulcer. The progress of the sore is generally slow either towards recovery or augmentation. When remedies are used, the first effect produced is removing the thickening by degrees, and lessening the discharge, or changing its nature, so that the surface of the sore can be seen; it has then in general a dark fiery look, which continues until all the diseased substance be removed, and the action of the part be completely changed. Now, from this description, we should, it may be supposed, be at no loss in saying, whether a sore were venereal; but in practice, we find many deviations from this description. The thickening may be less in one case than another, and may not be easily discovered, yet the sore may be certainly venereal. Peculiarity of constitution, or of the part affected, can modify greatly the effects of the virus. There may be extensive inflammation, or phagedænic ulceration; and yet the action may be venereal. It is, however, satisfactory to know in these cases, that in a little time, unless extensive sloughing have taken place, the appearance of the sore becomes more decided, the proper character of chancre appears, and the usual remedy cures the patient.

Phagedæna is a very troublesome, and sometimes a formidable disease, especially to infants. I shall here only notice that form which appears in adults, and which, as it is infectious, may be mistaken for syphilis. It commences with a livid redness of the

part, succeeded speedily by vesication and ulceration, which extends laterally, and sometimes penetrates deep. The ulcer has an eating appearance, is painful, discharges a great quantity of matter, and very often is attended with fever. A variety of this disease is attended with superficial sloughing, which may be frequently repeated, and is generally preceded by a peculiar appearance of cleanness in the sore. This is not to be confounded with sloughing, produced by simple inflammation or irritation of the parts, which is similar in its nature and treatment to common gangrene. We must foment the sore with decoction of camomile flowers, mixed with a little tincture of opium, and then apply mild dressings. Rest is essential to the cure: and if a febrile state exist, it is to be obviated by laxatives, acids, mild diaphoretics, and decoction of bark. If there be no fever, mercury, or the nitrous acid, often effectually change the action of the parts.

Sometimes irritable sores appear on different parts of the labia, or orifice of the vagina, in succession, healing slowly one after another. These have an inflamed appearance, the margins are sometimes tumid, and the surface is at first irregular and depressed, but afterwards it forms luxuriant granulations. There is another sore met with on the inside of the labium, and which generally spreads to the size of a sixpence. The surface is quite flat, and sunk a little below the level of the surrounding parts. The margins are thickened, and sometimes callous, the discharge thin, and the ulcer not in general painful, the surface soft and spongy without a hard base. These sores generally agree best with stimulants, especially caustic and escharotics. When they do not yield to this treatment, it will be proper to have recourse to a cautious course of mercury. Some of these, like the phagedæna, are infectious.

Some of these sores are occasionally productive of secondary symptoms, such as ulcers in the throat. When these succeed a sore which has run its course differently from chancre, and been healed without the use of mercury, it is allowable to suppose, that they also may be cured, merely by attending to the general health, and perhaps by local applications. But if they continue without amendment, or threaten danger to any important part, we must not delay making trial of mercury.

§ 3. EXCRESCENCES ON THE LABIA.

Sometimes after a slight degree of inflammation, producing heat and itching of the parts, numerous excrescences appear within the labia. These are either soft and fungous, or hard and warty. Both of these states may be induced by previous venereal inflammation; but they may also occur independently of that disease. Even where there is an offensive discharge from the fungi or warts, we are not always to conclude that they are syphilitic, but be guided in our judgment by concomitant circumstances. Warty excrescences are most readily removed, by the application of savin powder by itself, or mixed with red precipitate; and during its operation, the parts may be washed with lime water. The powder must be applied to the roots of the warts, for their substance is almost insensible. Fungous excrescences may sometimes be removed by ligature; but when the parts are sensible, they must be destroyed, by applying a strong solution of caustic with a pencil, or sprinkling them with escharotic substances. If these cannot be borne, we must first abate the sensibility by tepid fomentations with decoction of poppies, or water with a little tincture of opium, or decoction of cicuta, or weak infusion of belladona. Should there be ground for suspecting a syphilitic action, mercury must be given, at the same time that we make suitable local applications; but in doubtful cases, I have seen this medicine given without any benefit. These excrescences, from their appearance, their great pain, and fœtid discharge, may suggest an opinion of their being cancerous: but they begin in a different way, and generally yield, though sometimes slowly, to proper applications.

§ 4. SCIRRHOUS TUMOURS.

Solid tumours may form in the labia, and are distinguished by their hardness, and by their moving under the skin, until adhesion from inflammation takes place. These tumours are sometimes scrophulous and have little pain, even when they have gone on to suppuration. Oftener, however, they are cancerous; and these are distinguished from the former, by their great hardness and ine-

quality, and by their shooting pain. If they are not removed, the cancerous abscess points to the inner surface of the labium, its top becomes dark coloured, sloughs off, a red fluid is discharged, and presently fungus appears. Soon after this, the glands at the top of the thigh, and sometimes those in the course of the vagina, swell. If all the diseased parts can be removed, an operation must be performed. If they cannot, we must palliate symptoms by proper dressing and opiates.(*n*)

§ 5. POLYPOUS TUMOURS.

Soft fleshy appendiculæ, or firm polypous tumours, sometimes spring from the labia. Both of these, especially the latter, may give trouble by their weight or size. They may also, by being fretted, come to ulcerate, and the ulceration is always of a disagreeable kind. They ought to be therefore early removed by the knife or the ligature. If the base be broad, the double ligature must be employed: but should there be any hardness about the part where the ligature would be applied, it is best to dissect the whole growth out.

Encysted tumours may form in the labia. They are elastic, and

(*n*) An immense tumour was successfully extirpated from the labia of a negro woman by Dr. Hartshorne at the Pennsylvania Hospital, in December, 1815, said to be produced by the kick of a horse, and of upwards of ten years standing.

In this case, the labia were much enlarged, and almost as hard as cartilage. The hardness and enlargement of the integuments extended anteriorly three inches above the pubis, and posteriorly to within two inches of the anus. The patient walked with great difficulty, as the circumference of the middle of the tumour was at least twenty inches, and its lower part almost reached the knees. The weight of the tumour removed, was upwards of eleven pounds.

On the evening of the third day after the operation, unequivocal symptoms of Tetanus appearing, and the violence of the spasms increasing, caustic potash was freely applied to the neck, over the cervical vertebræ. The effect of this application in lessening the convulsive action of the muscles was very evident.

The woman was discharged well, on the 6th of April, ensuing.

In Larrey's Memoirs, vol. I. p. 299, will be found a description of a similar tumour; and in plate X. an engraving.

contain a glairy fluid. The cyst may be laid open, or it is to be dissected out.(*o*)

§ 6. ŒDEMA.

Œdematous tumour of the labium is either a consequence of pregnancy, or a symptom of general dropsy. The tumour is variable in its size. When it depends on pregnancy, it is seldom necessary to do any thing; and even in time of labour, although the tumour be great, we need be under little apprehension, for it will yield to the pressure of the child's head. But if at any time, during gestation, the distention be so great as to give much pain, then one or two punctures may be made, in order to let out the fluid; but this is very rarely necessary. Gentle laxatives are generally useful. Blisters applied to the vicinity of the part have been proposed; but they are painful and even dangerous. When the swelling depends on dropsy, diuretics are to be employed; but if the woman be pregnant, they must be used cautiously.

§ 7. HERNIA, LACERATION, &c.

Pudendal hernia is formed in the middle of the labium. It may be traced into the cavity of the pelvis, on the inside of the ramus of the ischium, and can be felt as far as the vagina extends. It differs farther from inguinal hernia, which also lodges in the labium, in this, that there is no tumour discoverable in the course of the round ligament from the groin. It sometimes goes up in a recumbent posture, or it may by pressure be returned. A pessary has little effect in keeping it up, unless it be made inconveniently large. It is not easy to adapt a truss to it, but some good is done with a firm T-bandage, or one similar to that used for prolapsus ani. If it cannot be reduced, we must support it by a proper bandage, which is not to be drawn tight.

Sometimes the labia are naturally very small, at other times uncommonly large; one side may be larger than the other.

(*o*) Would it not be more eligible, when practicable, to extirpate the cyst completely by the knife, to prevent the risk of its sloughing away?

Laceration of the labia is to be treated like other wounds. When the hemorrhage is great, the vagina must be plugged, and a firm compress applied externally, with a proper bandage.

§ 8. DISEASES OF THE NYMPHÆ.

The most frequent disease to which the nympha is subject is elongation. When the part protrudes beyond the labia, it becomes covered with a white and more insensible skin. But sometimes it is fretted, on which account, or from other causes, women submit to have the nympha cut away. This is done at once by a simple incision, but, as the part is exceedingly vascular, we must afterwards restrain the hemorrhage, either with a ligature or by pressure. By neglect, the patient may lose blood, even *ad deliquium.* In some countries, this elongation of the nympha is very common.* In others, the nymphæ, together with the preputium clitoridis, are removed in infancy.† The nymphæ are subject to ulceration, tumour, and other diseases, in common with the labia.

Sometimes by falls, but oftener‡ in labour, the vascular structure of the nympha is injured, and a great quantity of blood is poured out into the cellular substance of the labium, producing a

* The females amongst the Bosjesmans have the nymphæ sometimes five inches long. Their colour is a livid blue, like the excrescence of a turkey. Vide Barrow's Travels in Africa, Vol. I. p. 279.

† On the shores of the Persian gulph, among the Christians in Abyssinia, and in Egypt among the Arabs and Copts, girls are circumcised. Niebuhr says, that at Kahira, the women who perform this operation are as well known as midwives. Travels, Vol. II. p. 250.—Dr Winterbottom, in his account of Sierra Leone, Vol. II. p. 239, says it is practised among the Mandingo, Foola, and Soosoo women.

‡ M. Causaubon has inserted a memoir on this subject, in the 1st Vol. of Recueil Periodique, which contains several useful cases. In one of these, the tumour was produced on the seventh month by a kick, and terminated fatally by hemorrhage.—In another given by Sedillot, the labia became prodigiously distended during labour, and the head of the child could not be touched. The labia were torn by the attendant. Afterward the child was delivered with the lever.—In cases related by Baudelocque, Brasdor, &c. the tumours were opened, and the vagina plugged, whilst the wound was stuffed with lint dipped in solution of alum, to prevent hemorrhage.

black and very painful tumour.* This may take place even before the child is expelled; and, in a case of this kind, the midwife, mistaking the swelling for the protruded membranes, actually perforated the labium, and caused a considerable discharge of blood.† More frequently, however, the tumour appears immediately after delivery,‡ and the attention is directed to it both by its magnitude and its sensibility, which is sometimes so great as to cause syncope. It is tense, throbbing, and may also be accompanied by severe pain in the legs, and violent bearing-down efforts,§ as if another child were to be born, or, as if the womb were inverted. It has, however, been known to advance so slowly, as not to attract attention for two days. There are also instances where the inflammation runs high, and the recto-vaginal septum sloughing, fæces are discharged by the vagina.‖

In the course of a short time the tumour bursts, and clotted and fluid blood is discharged. This process should be hastened by fomentations and poultices, and the pain be abated by opiates; but if it be very great, relief may be obtained by making a small puncture in the inside of the labium.¶ Whether the tumour burst,

* In a case related by Mr. Reeve, the tumour, which I suspect proceeded from the rupture of the nympha, was perceived first in perineo, but soon occupied all the left labium, which was enormously distended. The pain at first was so great as to cause syncope. The parts sloughed, and discharged pus and clotted blood. Bark was given, and she got well. Lond. Med. Journ. Vol. IX. p. 119.

† Vide case by Dr. Maitland, in Med. Comment. Vol. VI. p. 95.—Dr. Perfect relates a case, where it burst itself before the child was born, and discharged much blood. Vol. II. p. 63.—In another, which ended fatally, the tumour burst after delivery, and discharged five pounds of blood. Vide Plenk Elementa, p. 111.—Case by M. Sedillot, in Recueil Period. Tom. I. p. 260.

‡ Vide cases by Dr. Macbride in Med. Obs. and Inq. Vol. V. p. 89.

§ In Mr. Blagden's case, related by Dr. Baillie, the woman soon after delivery had violent bearing-down pains, as if another child were to be born. A monstrous swelling appeared in the right labium, extending to the perineum. A large incision was made, which did not heal till the 21st day. Med. and Physical Journal. Vol. II. p. 42.

‖ Vide Fichet de Flechy, Observ. p. 375. The patient was cured by introducing a compress into the vagina, and dressing the sore with digestive ointment.

¶ Le Dran relates a case, where above 20 ounces of blood were evacuated by incision. Consultations, p. 413.

or be punctured, the previous inflammation may close the vessels so as to prevent hemorrhage; but if it do not, the vagina is to be gently filled with a soft cloth to prevent the fluid from extending along the sides of the pelvis. A compress is also to be firmly retained externally, to check all hemorrhage from the aperture. If inflammation run high, it is to be abated by the usual means.

§ 9. DISEASES OF THE CLITORIS.

The clitoris may become scirrhous, and even be affected with cancerous ulceration. In this disease, it is generally thickened, enlarged,* and indurated, and the patient complains of considerable pain. Presently ulceration takes place and fungus shoots out. In no case of this kind that I have met with, has an operation been submitted to; and, indeed, unless the whole of the diseased part can be removed, we must be satisfied with palliating symptoms. In one case, however, related by Kramer,† where the clitoris was enlarged, with cauliflower-like excrescences, and the right nympha indurated, the parts were successfully removed by the knife, after failing with the ligature, which produced insupportable pain.

The clitoris sometimes becomes preternaturally elongated; and if this take place in infancy, and be accompanied with imperfect or confused structure of the other parts, the person may pass for an hermaphrodite.‡ This is said to be most frequent in warm

* Mr. Simmons cut off a clitoris, which formed a tumour nine inches in length, and fourteen in circumference, at the largest end. The circumference of the stem was five inches. Med. and Phys. Journal, Vol. V. p. 1.

† Schmucker's Miscel, Surg. Essays. art. XXXIII.

‡ Upon this subject, see Arnaud on Hermaphrodites.

In a child aged three years, I found the mons veneris prominent, and as well as the labia, covered with a considerable quantity of red hair. The labia were large and thick, like those of a grown woman, but shorter. Their inner surface was white and rugous, until near the orifice of the vagina, where the skin was red. At the top the labia divaricated, and showed a large clitoris, which hung down like the penis; it was upwards of an inch long, and about half an inch in diameter, and furnished with a thick wrinkled prepuce. It had a distinct glans, at the end of which was observed something like a perforation; but on raising it up, this was seen to be only the extremity of a deep sulcus, which extended all the way

climates; and in these, extirpation is sometimes performed. Haller assigns a cause for the enlargement.

§ 10. DISEASES OF THE HYMEN.

The most frequent disease of the hymen is imperforation; in consequence of which the menses are retained,* the uterus is distended, and the orifice of the vagina protruded, so as sometimes to resemble polypus or a prolapsus uteri;† or it becomes fretted and covered with scabs. Even the perineum may be stretched, as if the head of a child rested on it.‡ Menstruation is generally painful, and the uterus becoming enlarged, contraction at last takes place, and pains like those of labour come on, especially about the menstrual period;§ such a case, may, therefore, by inattention, be mistaken for parturition.‖ The sufferings of the patient are, in

to the urethra, or orifice of the vagina. It resembled the male urethra slit up. The sides of this were formed by the nymphæ. A little before the orifice of the urethra, there was a longitudinal eminence, like the veru montanum. The vagina was shut up by the hymen. The uterus was large like that of a girl of fourteen years of age, and was shaped like hers. The ovaria were of corresponding size; one of them lay on the psoas muscle, the other was loose in the pelvis. The tubes were fimbriated at the extremity, but in their course were knotted and serpentine, like the commencement of the vas deferens. The uterus was very vascular, and had an inflamed appearance. Its mouth was apparently impervious.

In a male child that I lately saw, the external parts resemble those of the female. The scrotum is cleft like the vulva, the penis consists only of corpora cavernosa, and the urethra opens between the labia formed by the scrotum.

* The same effect may be produced, by a continuation of the skin being extended over the parts. It must be cut up. See a case by M. Larrey, in Rapport General de la Societé Philomatique, Tom. II. p. 86.

† Vide case of a patient of Dr. Chamberlain's, in Cowper's Anatomy.—Case by Mr. Fryer, in Med. Facts and Obs. Vol. VIII. p. 132.

‡ Case by Mr. Sherwin, in Med. Records, &c. p. 279.

§ Case by Mr. Kæymer, in Med. Annals, Vol. VI. p. 347. By Mr. Eason, in Med. Comment. Vol. II. p. 187. and a variety of other cases. This, in every instance I have known, has been the greatest complaint.

‖ Dr. Smellie candidly acknowledges, that in one instance he took the protrusion of the hymen for the membranes of the ovum forced down by labour pains. These pains were accompanied with suppression of urine. He let out about two quarts of blood. Coll. I. n. i. c. 6.

some instances, increased by the addition of suppression of urine,* or pain in passing the fæces,† or convulsions.‡ Imperforated hymen is by no means uncommon, and the treatment is very simple, for the part is easily divided.§ The retained fluid is thus evacuated, sometimes in very great quantity. It has very rarely the appearance of blood, being generally dark coloured, and pretty thick, or even like pitch. Febrile and inflammatory symptoms may follow the operation.‖

The hymen is sometimes perforated as usual, but very strong, so as to impede the sexual intercourse; yet in those cases impregnation has taken place, and the hymen has been torn,¶ or cut in the act of parturition. Conception may take place, although the hymen be imperforated.**

* In a case related by Benevoli, the belly was very much swelled, and the urine suppressed. He attempted to pass the catheter, but without success. Next day he repeated his endeavour, and pushing with more force than prudence, considering his object, he ruptured the hymen, and immediately a great quantity of dark matter was evacuated, even to the extent of 32 pints.—See also Mr. Fryer's case.—Mr. Warner relates the case of a little girl, where the hymen was continued half way over the orifice of the urethra. The effects were at first attributed to stone in the bladder; but the nature of the case being made out, she was cured by dividing the hymen. Cases, p. 75.

† In a case by Mr. Bardy, the patient, who was 15 years of age, had every month, for some days, pain in the uterine region. The external parts were greatly protruded and stretched as in labour, and the nymphæ formed merely two lines. The anus was thrust backward and distended, and she passed the urine and fæces with great pain; the hymen from irritation was covered with scab, the health had suffered. Six pounds of thick gelatinous matter were evacuated by incision. Med. and Chir. Review for September, 1807.

‡ Vide Case by Mr. Eynney, in Med. Comment. Vol. III. p. 194.

§ In Mr. Fynney's case, the part to be divided was very thick; and in Dr. M'Cormick's case, the vagina seemed to be in part impervious. Med. Comment. Vol. II. p. 188.—In general the membrane is thin.

‖ Vide Mr. Niven's case, in Med. Comment. Vol. IX. p. 330. The symptoms gradually abated.

¶ M. Baudelocque mentions an instance where the hymen resisted, for half an hour, the strong action of the uterus. Note to section 341.

** Vide Ambrose Paré, Hildanus, cent. III. ob. 60.—Ruysch, ob. 22.—Mauriceau, ob. 439. In a case lately published by Champion, the urethra was greatly dilated, and had served as a substitute for the vagina, notwithstanding which the female became pregnant, and was delivered by dividing the hymen. Jour. de Med. T. LXVIII. p. 84.

When the hymen is torn in coitu, some blood is evacuated, which, in many countries, is considered as a mark of virginity. But as even the presence or absence of a hymen cannot be looked upon as affording any certain proof relative to chastity, this test must be considered as altogether doubtful. When the hymen is ruptured, and there is an inflammation about the external parts, some have, in cases of alleged rape, considered the crime as proven. But whoever attentively examines the subject must admit, that these are very fallacious marks; that they may exist without any violence having been employed; and that a woman may have, if previously stupified, been violated without exhibiting any mark of injury. Practitioners therefore ought, in a legal question of this nature, to be cautious how they give any opinion, especially if they have not seen the person immediately after the crime has been committed.*

§ 11. LACERATION OF THE PERINÆUM.

The perineum may be torn during the expulsion of the head or arms of the child. In many cases, the laceration does not extend farther back than to the anus, nor even so far. This is a very simple accident, and requires no other management than rest, and attention to cleanliness. But as the recto-vaginal septum is carried forwards and downwards, when the perineum is put on the stretch previous to the expulsion of the head, it sometimes happens, that the laceration extends along this septum, and a communication is formed betwixt the rectum and vagina. In some cases, the sphincter ani remains entire, although the rectum be lacerated; in others it also is torn. This accident is attended with considerable pain and hemorrhage, and succeeded by an inability to retain the fæces, which pass rather by the vagina than the rectum. Prolapsus uteri is also, in some instances, a consequence of this laceration. This accident is sometimes produced by attempts to distend the parts previous to delivery, or by the use of instruments; but it may also

* Vide Baudelocque, l'Art, &c. sec. 342, et Foderé Med. Legale. Tome II. p. 3.

take place, even to a great degree, in a labour otherwise natural and easy, and in which no attempts have been made to accelerate delivery. The most effectual way to prevent laceration is by supporting the perineum with the hand, when it is stretched, and keeping the head from being suddenly forced out. When the parts have been actually torn, our first attention is to be directed to the repressing of the hemorrhage, which is sometimes considerable: and this is best effected by compression and rest, which favour the formation of coagula. Next, we are to consider how the divided parts may be united. Rest, and retaining the thighs as much together as possible, together with frequent ablution, in order to remove the urine, which sometimes for a few days flows involuntary, or the lochia and stools, are requisites in every mode of treatment. As there is nothing in the structure of the parts to prevent their re-union, it has very feasibly been proposed to induce a state of costiveness, and prevent a stool for many days. But with only one or two exceptions, this method has failed; the subsequent expulsion of the indurated fæces tearing open the parts, if adhesion had taken place. An opposite practice, that of keeping the bowels open, and the stools soft or thin, by gentle laxatives, has been much more successful, the parts, in some instances, healing in a few weeks; and this is the practice I would recommend to be adopted, taking care, at the same time, to keep the parts in contact, by confining the patient to bed, with the thighs kept together. During this period, the stools are, at least for a time, passed involuntary; but in other instances, they can from the first be retained, if the patient keep in bed. Sutures have been also employed, and ought certainly at last to be had recourse to, if re-union cannot otherwise be effected.*(p)* The edges of the divided parts must previously be made raw. It would appear that there is no occasion for putting a ligature in the recto-vaginal septum. It is sufficient to place two in the perineum. When the sphincter ani remains entire, but the septum is torn, some have considered it necessary to divide that muscle; but others, with more reason, omit this practice. During

(p) Sutures should be rarely had recourse to, as they occasion considerable irritation, and are liable to be torn, or to slough out.

the cure, some introduce a canula into the vagina, to support the parts, and others apply compresses dipped in balsams; but it is better to apply merely a pledget, spread with simple ointment to the part. If the radical cure fail, the patient must use a compress, with a T-bandage, if the stools cannot be retained. But it sometimes happens that the torn extremity of the rectum, or the anterior part, forms a kind of flat valve, which rests on the posterior surface at the coccyx, so that the orifice now resembles a slit, and the fæces, unless very liquid, remain in the hollow of the sacrum, and do not pass through the valvular orifice till an effort be made to expel.*

§ 12. IMPERFECTION OF THE VAGINA.

The vagina may be unusually small. I have known it not above three inches long, and sometimes it is very narrow. The size, if necessary, may be enlarged with a tent of prepared sponge.† Should pregnancy take place before it be fully dilated, we need be under no apprehension with regard to delivery; for during labour, or even long before it, relaxation‡ takes place. Sometimes the vagina is wanting or impervious, or all the middle portion of the canal is filled up with solid matter. More frequently, however, there is only a firm septum stretched across, behind the situation of the hymen, or higher up in the vagina; and this§ it may be necessary to divide. In some cases, there is a great confusion of

* Upon this subject, vide La Motte's Traité; and cases and observations by Noel, Saucerote, Trainel, and Sedillot, in the fourth and seventh Vol. of the Recueil Periodique. Dr. Denman mentions an instance where the perineum was not torn up, but perforated by the head. Both Petit and Gardien notice the fact that the stools may ultimately come to be retained, but do not seem aware that this depends on the formation of a valve. They think it owing to the sphincter regaining its power.

† Vide Van Swieten Comment. in aph. 1290.

‡ In a case where the vagina would not admit the point of the little finger, the child was delivered after eighteen hours labour. Plenk Elementa, p. 113. See also Van Swieten.

§ This may produce bad effects, from retention of the menses. M. Magnan relates the case of a girl, aged 22 years, who had been subject to monthly colics and suppression of urine. An incision was made through the membrane, and two pounds of blood let out. Hist. de la Societé de Med. pour 1776, art. II.

parts, and indeed, it is impossible to describe the varieties of conformation; for the vagina may follow a wrong course, or communicate with the urethra, or the rectum* may terminate in the vagina, &c. Malformation does not always prevent pregnancy.†

§ 13. INFLAMMATION AND GANGRENE OF THE VAGINA.

In consequence of very severe labour, inflammation, followed by gangrene of the vagina, may be produced. If the sloughs be small, then partial contraction of the diameter of the canal may take place, and cause much inconvenience from retention of the menses,‡ or during a subsequent labour; but in this last case, the parts gradually yield, and it is seldom necessary to perform any operation: the pain, however, is sometimes excruciating till the part yield.§

In some instances the sloughs are so extensive, that the whole vulva is destroyed, or part of the urethra and vagina come away, or general adhesion takes place, leaving only a small opening, through which the urine and the menses flow. Should this, by

* In this case the fæces do not always pass continually. The patient has been known not to have a stool once in a fortnight; which probably depended on the fæces being indurated, and the communication small.

† In the 33d Vol. of the Phil. Trans. p. 142, there is a case related, where there was a kind of double vagina, separated by a transverse septum or membrane. The orifices were very small. During labour, the pain was so great as to produce convulsions. She was delivered, by laying the two passages into one. Chapman relates a case of malformation, where the woman was impregnated, and in labour all the forcing was felt at the anus. From this an opening was made through into the vagina, and the child was born per anum. Portal mentions a girl, who had only a very small aperture at the vulva, for the evacuation of the urine; the menses came from the rectum; nevertheless, she became pregnant. Before delivery, the orifice of the vagina appeared, and she bore the child the usual way. Precis de Chirurgie, Tom. II. p. 745.

‡ Richter in Comment. Gotting. Tom. III. art. 2. relates a case of a girl aged 20 years, who for three years had been subject to violent pains about the sacrum, with tremours and syncope every month. The vagina was found to be closed at the upper part, in consequence, it was imagined, of a variolous ulcer in infancy. Fluctuation was felt in the vagina, when pressure was made with the other hand on the abdomen. The contraction was opened, and a quantity of blood let out.

§ Harvey, exercit. LXXIII. p. 492.

any means be obstructed, the discharges cannot take place; and sharp pains, or even convulsions, may be the consequence. Sometimes calculous concretions form beyond the adhering part.*

Whenever we have reason to expect a tender state of the parts after delivery, we must be exceedingly attentive; and if the vagina, or any other organ, be inflamed or tender, we must bathe the parts frequently, and inject some tepid water gently, to promote cleanliness. Saturnine fomentations and injections are often of service, but they must not be thrown high. The urine must be regularly evacuated; and should a slough take place, we must, by proper dressings, or the use of a thick bougie, prevent coalescence of the vaginal canal.†

Abscesses and sinuses connected with the vagina, must be treated on the general principle of surgery; but it is proper to mention that sometimes the orifice of the sinus is excessively tender to the touch, insomuch as almost to produce syncope. In all cases of extreme sensibility of this canal, it ought to be carefully examined, and the painful spot may point out the seat of the disease. The sinus should be laid open, and hemorrhage prevented by the injection of cold water, or insertion of lint, wet with cold water.

§ 14. INDURATION, ULCERATION AND POLYPI.

The vagina may be contracted by scirrhous glands in its course, or induration of its parietes, which become thick and ulcerated, and communicate with the bladder or rectum. This disease is generally preceded by, or accompanied with, scirrhous uterus, and requires the same treatment.

Foreign bodies in the vagina produce ulceration, and fungous excrescences. The source of irritation being removed, the parts

* Vide Puzos Traité, p. 140.—Case by Mr. Purton, in Med. and Phys. Jour. Vol. VI. p. 2.

† In some parts of Africa, the vagina is made impervious, in order to prevent coition. This operation is generally performed betwixt the age of eleven and twelve years. Brown's Travels, p. 349.

heal; but we must, by dressing and injections, prevent coalescence.

Polypous tumours may spring from the vagina, and are to be distinguished from polypus of the uterus by examination. The diagnosis betwixt polypus and prolapsus, or inversio uteri, will be afterwards pointed out. The cure is effected by the application of the ligature more solito.

§ 15. INVERSION.

The vagina may be inverted or prolapsed, without any material change in the state of the womb, and without symptoms of uterine irritation, farther than slight pain in the back, and a little mucous discharge. We find a fleshy substance protruding at the back part of the vulva, having an opening before leading into the vagina. If the procidentia be considerable, the rectum is carried forward, and in every instance is relaxed. At first the tumour is soft; but after some time, if the part has been irritated, it may inflame, indurate, or ulcerate. It is cured by strict attention to the state of the bowels, thereby preventing accumulation in the rectum, by astringent injections into the vagina, the cold bath, the internal use of tincture of kino, and, if these fail, by a globe pessary, or a spring-bandage similar to that employed for prolapsus ani, or by pregnancy; but it sometimes returns after delivery.*

§ 16. WATERY TUMOUR.

Water sometimes passes down from the abdominal cavity, betwixt the vagina and rectum, protruding the posterior surface of the vagina in the form of a bag; and the accumulation of water in the cavity of the pelvis is sometimes so great as to obstruct the flow of the urine, or produce strangury. When the person lies

* Burton relates a case, where the prolapsed vagina was mistaken for part of the placenta, and rudely pulled away, by which the vagina and bladder were torn. System, p. 170.

Stollers relates a case, where this was complicated with calculi. These being removed, the parts were reduced, and a cure obtained. Cases, Obs. 2.

down, the swelling disappears. If large, a candle held on the opposite side, sometimes shows it to be transparent; and in every case, fluctuation may be felt. As this symptom is connected with ascites, the usual treatment of that disease must be pursued, and, if necessary, the water may be drawn off by tapping the abdomen, or rather by piercing* the tumour, which is to be rendered tense, by pressing it with the finger.

§ 17. HERNIA.

Sometimes the intestine passes down betwixt the vagina and rectum, forming perineal hernia, or protrudes either at the lateral or posterior part of the orifice of the vagina, like the watery tumour; but is distinguished from it by its firmer and more doughy feel, and by the manner in which it can be returned. By handling it, a gurgling noise may be heard, and sometimes indurated fæces may be felt. As the os uteri is pushed forward, and the posterior part of the vagina occupied by the herniary tumour, this complaint may put on some appearance of retroverted uterus. A case of

* Mr. Henry Watson, in the Med. Communications, Vol. I. p. 162, called the attention of practitioners to this disease. In a case he relates, he drew off in the month of June, four gallons of fluid, by tapping the vagina; and immediately after this she passed the urine freely, which she could not do before. She required again to be tapped in two months, and died in November. The left ovarium was found to be converted into a cyst about the size of a sow's bladder, but it had not been touched by the trocar. In one case, he punctured with a lancet instead of a trocar, but this was succeeded by troublesome hemorrhage. The good effects of tapping are also seen in a case related by Mr. Coley, in Med. and Phys. Journal, Vol. VII. p. 412. In this two gallons of water were drawn off, and she continued well for five months, after which dropsical symptoms returned, and although diuretics gave her some relief, yet she was at last cut off. In the case of Mrs. Jarritt, related by Sir W. Bishop, in Med. Commun. Vol. II. p. 360, pain was felt in the right side of the belly, after parturition, accompanied with tumefaction. In two years the vagina became prolapsed, the tumour being four inches in diameter. The tumour was punctured twice; the first time 46 pints, the second 51, were drawn off. Diuretics had no effect. In a case related by Dr. Denman, the woman was pregnant, and no operation was performed. On the fourth day after her delivery, after a few loose stools, she expired. Introd. Vol. I. p. 150.

this kind is mentioned by Dr. John Sims, in Mr. Cooper's work on Hernia. This complaint is frequently attended with a bearing-down pain; and on this account, as well as from its appearance, it has also been mistaken for prolapsus uteri. Sometimes the tumour does not protrude externally; but symptoms of strangulated hernia may appear, the cause of which cannot be known, unless the practitioner examine the vagina. In a case occurring to Dr. Maclaurin, and noticed by Dr. Denman, the patient died on the third day, and the disease was not discovered till the body was opened. Should a woman have vaginal hernia during pregnancy, we must be careful to return it before labour begin, for the intestine may become inflamed, and the fæces obstructed, by the head entering the pelvis; or the labour itself, if the head cannot be raised and the intestine returned, may be impeded so much as to require the use of instruments. Vaginal hernia requires the use of a pessary, or a spring-support.

The rectum sometimes protrudes into the vagina, and always does so more or less in an inversio vaginæ. This is remedied by the globe pessary, after all the indurated fæces have been removed. The farther accumulation is prevented by laxatives.

§ 18. ENCYSTED TUMOUR AND VARICES.

Indolent abscess, or encysted tumours, may form betwixt the vagina and neighbouring parts. These are distinguished from hernia and watery tumours by being incompressible, and not disappearing by change of posture. The history of the disease assists the diagnosis, and examination discovers the precise seat and connections of the tumour, though it cannot with certainty point out the nature of the contents. These tumours seldom afford obstinate resistance to delivery; by degrees they yield to the pressure of the head, but sometimes they return after delivery. The treatment is similar to that required in other cases of tedious labour, and the tumour must be opened, if we cannot deliver the woman otherwise, with safety to the child. Even in the unimpregnated state, if it cause irritation, or if the bulk of the tumour

be so great as to impede the evacuation of urine or fæces, an opening must be made. After delivery, in those cases where no operation is performed, the tumour sometimes inflames and indurates even so low as the perineum. Friction on the perineum has, in these circumstances, done good.

Varicose tumours, of a knotted form, disappearing or becoming slack by pressure, and aneurismal tumours, distinguishable by their pulsation, may form about the vagina, and ought not to be interfered with, except by supporting them with a globe in the vagina.

§ 19. SPONGOID TUMOUR.

A very dreadful disease, which I have called spongoid tumour, may form either within the pelvis, or about the hip-joint, or tuberosity of the ischium, and spread inwards, pressing on the bladder and rectum, sometimes so much as to require the use of the catheter. We recognise the disease, by its assuming very early the appearance of a firm elastic tumour, as if a sponge were tied up tightly in a piece of bladder. Presently it becomes irregular, and the most prominent parts burst, discharging a red fluid, which is succeeded by fungous ulceration. But I have never known it proceed to this last stage within the pelvis. I know of no remedy, and would dissuade from puncturing, except in the very last extremity. I have never met with a case where it was necessary.

§ 20. ERYSIPELATOUS INFLAMMATION.

The orifice of the vagina, together with the labia, and indeed the whole vulva may be affected by erysipelatous inflammation. This appears under two conditions: 1*st*, it may originate in the vulva, and spread inwards, even to the uterus; or, 2*dly*, it may begin in the womb, and extend outwards. The parts are tumid, painful, and of a dark red colour. The second affection is most frequent after parturition; but the first may occur at any age, and under a variety of circumstances. It may be confined to the ex-

ternal parts alone, or it may quickly spread within the pelvis, and destroy the patient; for this disease generally terminates in gangrene. Vigarous* says, this state may be distinguished from abscess of the labium, by both labia being equally affected. The general history of the case, and proper examination, will point out the difference. When the disease is confined to the external parts, we may hope for a cure, and even for the preservation of the parts, by giving early, bark and opium internally, and applying to the surface, pledgits dipped in weak solution of sulphate of zinc, with the addition of a tenth part of camphorated spirit of wine. When this application gives continued pain, fomentations with milk and water, or with decoction of chamomile flowers may be substituted.

A highly sensible or inflamed state of the parts may occur in nymphomania, or libidinous madness, either as a primary or secondary affection; and should the patient die under the disease, the parts are generally found black. The tepid bath and fomentations give relief, and sometimes saturnine applications are beneficial. The acetite of lead has also been given internally. If the patient be feverish, she ought to be blooded, and have cathartics administered, and be put on spare diet. Nauseating doses of tartar emetic, or full doses of the medicine, given so as to operate briskly, are of service, especially if followed by sleep. Strict and prudent attention must be paid to the mind.

A constant heat and tenderness of the parts, if not occasioned by uterine disease, may be relieved by bathing with solution of sulphate of zinc, and using laxatives.

Prurigo is often symptomatic of disease in the uterus, or irritation in the neighbouring parts; and in these cases can only be removed by acting on the cause. When it is not dependent on any evident local disorder, it is allayed or cured by keeping the bowels open, avoiding stimulants, and applying to the affected parts ung. hyd. nit. or bathing frequently with very weak solutions of oxymuriate of mercury, or the same salt mixed with lime water, or lime water alone, or solution of sulphate of zinc alone, or with laudanum,

* Maladies des Femmes, Tome II. p. 169.

&c. This affection may attend the early period of pregnancy, or the cessation of menstruation.

Prurigo affecting the anus alone, or along with the pudendum, may arise from ascarides or other removable irritations; but in elderly females this symptom should always lead to an examination of the rectum, for it often attends stricture or alteration of the intestine, which should be early attacked by suitable means. So far as itching and local uneasiness require prescription, nothing often succeeds better than a suppository consisting of three grains of extract of hemlock and one of opium.

§ 21. FLUOR ALBUS.

The vagina is always moistened with a fluid, secreted by the lacunæ on its surface. To this is added the secretion from the glands of the cervix uteri, and the serous exhalation from the membrane of the uterine cavity. Naturally, the balance between secretion and absorption is such, that except on particular occasions, no fluid is discharged from the vagina. But in a diseased state, the quantity of the secretion is greatly increased, and the discharge, whether proceeding solely from the vagina, or partly also from the womb, receives the name of fluor albus, leucorrhœa. Some confine the term strictly to a discharge from the inner surface of the womb; and in order to determine whether the secretion proceeds from the uterus or not, it has been proposed to stuff the vagina completely for some time, and then inspect the plug, to ascertain whether that part corresponding to the os uteri be moistened.* But this test is not satisfactory, and will seldom be submitted to.

When the discharge proceeds from the womb, it sometimes injures the function of that organ so much, or is dependent on a cause influencing the uterus so strongly, as to interfere with menstruation, either stopping it altogether, or rendering it too abundant or irregular in its appearance; and in such cases, the woman seldom conceives. Very frequently, however, the menses do continue pretty regularly; and in those cases, the other discharge disappears

* Chambon, Malad. des Filles, p. 104.

during the flow of the menses, but is increased for a little before and after menstruation. When the menses are obstructed, it is not uncommon for the fluor albus to become more abundant, and to be attended with more pain in the back, about the monthly period. In such cases it has been thought that the leucorrhœa served as a substitute for menstruation, and that it was dangerous to check it. If a woman, who has uterine leucorrhœa conceive, the discharge stops, but a vaginal secretion is, on the contrary, not unfrequently increased. This it has been thought dangerous to check suddenly, but it ought not to be allowed to continue profuse, as it causes abortion.

Fluor albus may occur in two very different states of the constitution, either as an effect of these, or produced in them by accidental causes. These are, a state of plethora, or disposition to vascular activity, and a state of debility. The one is marked by a full habit, a good complexion, and a clear healthy skin. The other by a pale countenance, a sallow surface, a feeble pulse, and generally a spare habit. The one is attended with vertigo, or disease produced by fulness. The other by dyspepsia, palpitation, and those complaints which are connected with debility.

The discharge is produced either by the lacunæ of the vagina, or the glandular and exhalent apparatus of the uterus. The most ample and the most frequent source is from the vagina. The discharge itself may consist simply of the natural mucus of the part increased in quantity, in which case it is glairy and transparent; or it may be so far changed as to become opaque, and white like milk, which is particularly the case when the organs of secretion of the upper part of the vagina and cervix uteri are affected, or it may be purulent. These may all occasionally be mixed with a little blood from the uterine vessels, if there be a tendency to menorrhagia, but not otherwise, unless there be organic disease. In those cases where the discharge is yielded by diseased structure, it is modified by the nature of that structure, and by the existence of ulceration and erosion. When it proceeds from the morbid part itself, and not from the irritating effects of that part on the vagina, by sympathy, it is generally fœtid, and purulent, often of a dark colour

mixed with blood, and alternated by uterine hemorrhage. There is often heat about the parts, and other symptoms of disease. In all ambiguous, and in every chronic case, it is necessary to examine carefully the state of the uterus and vagina.

We must bear in mind that fluor albus may be caused by local irritation, including the effect of diseased structure, or misplaced uterus; by a state of increased vascular action; and by debility, either preceded by increased action, or directly produced by weakening causes.

Fluor albus is usually accompanied with pain, and sense of weakness in the back. The functions of the digestive organs are always ultimately injured, and in those women who are of a weak habit, they are impaired from the first. In them the discharge adds greatly to the debility, and all the diseases arising from that state increase, such as indigestion, derangement of the hepatic secretion, torpor of the bowels, palpitation, swelling of the feet, &c. In the more plethoric patients, the debilitating effects are longer of appearing, but they are not exempted from affection of the stomach.

Fluor albus may be excited by the presence of a polypus in utero, or in consequence of prolapsus uteri, or of disease of the womb; but in such cases it is symptomatic, and is not at present to be considered. The idiopathic fluor albus may be produced by various exciting causes, such as abortion, menorrhagia, frequent parturition, excessive venery, cold or fatigue after a miscarriage or a delivery at the full time, and whatever can weaken the action of the uterus.* It was at one time supposed, that it might also be produced by a bad state of the fluids of the body, a bilious cacochymy, a leucophlegmatic habit, passions of the mind, &c. The application of cold, or rather circumstances exciting irritation of the vaginal membrane, may produce it in the same way as they produce catarrh. Worms may cause it.

In treating fluor albus, we must consider whether it be symptomatic of polypus, prolapsus, or cancer, &c. If it be not, we have then to attend to the general state of the constitution. Should the

* Chambon, Malad. des Filles, p. 104.

patient be plethoric, or robust, it is necessary, in the first instance, to diminish the fulness and activity of the vessels, by mild and perhaps, spare diet, by moderate doses of laxative medicine, and even, if requisite, by the lancet. Regular exercise is, in this view, of benefit, but in all cases, fatigue increases the discharge. Then we give bitters with alkali, to improve the state of the stomach and bowels, and employ an injection of solution of acetite of lead, which is to be thrown three or four times a day into the vagina, and this may afterwards be exchanged for one of a more astringent quality. I agree with those who think that, in cases connected with plethora, astringent injections, especially if used early, are hurtful, and may give a disposition to uterine diseases.

If the disease occur in a weak habit, or if the plethoric state, though it existed at one time, have now been removed, the internal remedies must be more directly tonic, and injections of various astringents must be employed; of these the two best are solution of sulphate of alumin, and decoction of oak bark. The action of cold and damp is to be avoided, as these are hurtful in every affection of mucous membranes, whether chronic or acute. Of the internal remedies, some are intended to act by sympathy on the secreting parts, as emetics, others as general tonics. Emetics are of very considerable advantage, on account of their operation on the stomach and alimentary canal, and are accordingly advised by most writers;* but they are not to be repeated, nor employed at all, during the existence of plethora. Purges have also been used,† in order to carry off noxious matter; but they are only to be given, so as to keep the bowels regular,‡ for brisk and repeated purging is hurtful.§ Tonic medicines, and those which improve the action of the chylopoetic viscera, such as lime water, myrrh, bark, steel, rhubarb, uva ursi, &c. are also of much utility, and

* Smellie, Vol. I. p. 67.—Vigarous, Tome I. p. 261.—Mead, Med. Precepts, chap. XIX. sect. 3d.—Denman, Vol. II. page 104.—See, also, Etmuller, Riverius, &c. &c.

† Chambon, Malad. des Filles, p. 107.—Mead, Med. Precepts, chap. XIX. sect. 3d.

‡ Stoll Prælectiones, Tomus II. p. 383.

§ Vigarous, Malad. des Femmes, Tome I. p. 261.

along with them we may, with great advantage, employ the cold bath. Kino has been advised by Vigarous and Gardien, and when astringents are proper, it may be employed in the form of tincture. The diet is to be light and nourishing, and the patient ought not to indulge in too much sleep.

Various medicines have been proposed with a view of acting specifically on the secreting parts, such as cicuta, balm of Gilead, diuretic salts, calomel, resins, cantharides, electricity, arnica, &c.; but they have very little good effect, and sometimes do harm. Of all these, the tincture of cantharides*(q)* and oil of turpentine, by exciting the uterine vessels in chronic secretions, seem to be the best, but no internal medicine can be much depended on, in this view. By suckling a child, the discharge has in some instances been removed. Plasters and liniments have been applied to the back, and sometimes relieve the aching pains. Opiates are occasionally required, on account of uneasy sensations. When it has succeeded to some eruptive disease, sulphureous preparations have been advised.

When the discharge is very opaque, and attended with considerable pain in the back and loins, there is reason to think that the cervix uteri is in a state of irritation, and by examination it may be found tender to the touch, and the mouth soft and enlarged a little. This state does not constitute disease of structure, though it may lead to it, but it consists merely in an affection of the glands. It is to be managed in the first stage, by the warm sea-water hip-bath, mild mercurial preparations, laxatives, and avoiding all irri-

(q) Mr. Roberton, a surgeon of Edinburgh, in a paper published in the London Medical and Physical Journal, Vol. XV. and also in a distinct work on the Effects of Cantharides, when taken internally, strongly recommends this powerful article of the materia medica, in obstinate cases of Leucorrhœa; and recites a number of instances, in which it appears to have produced the best effects. In his exhibition of this medicine, he generally begun with about ʒij or ʒijss of the tincture, in ℥vj of water; a table spoonful of which was given thrice a day. He continued gradually increasing the dose, until his patient had taken ʒiv of the tincture in 24 hours, ℥j of the tincture being added to ℥vj of water. It was generally given, until considerable pain, and a puriform discharge from the vagina was produced. I cannot say, that in the few trials I have made of it in this complaint, the beneficial effects have been so conspicuous.

tation. After the tender state is nearly subdued, and the discharge has become more chronic, the cold bath, tonics, and mild vegetable astringent injections, are proper.

Purulent discharge implies previous inflammation, and the present existence either of abscess, ulceration, or a morbid change of a secreting surface. The two first states are ascertained by examination. The last chiefly by the smarting in making water, and other symptoms excited by the action of a virus. To this species belongs the gonorrhœa, which is to be cured by mild laxatives, and injections, first of acetite of lead, and then of sulphate of zinc, dissolved in water. The two first states are to be managed according to the causes which give rise to them.

On the whole, then, our practice in fluor albus, unaccompanied with organic affection, consists in rectifying the constitution, bringing it as far as possible to a state of perfect health, employing topical applications in the form of injections, and avoiding the farther operation of exciting causes.

§ 22. AFFECTIONS OF THE BLADDER.

The bladder is subject to several diseases. The first I shall mention is stone. This excites very considerable pain in the region of the bladder, remarkably increased after making water. There is also irritation about the urethra, with a frequent desire to void the urine; but it does not always flow freely, sometimes stopping very unexpectedly. The urine deposits a sandy sediment, and is often mixed with mucus. These symptoms lead to a suspicion that there is a stone in the bladder, but we can be certain only by passing a sound. By means of the warm bath,(r) opiates, and the

(r) Our author has omitted to mention the efficacy of magnesia in calculous complaints, as recommended by Messrs. Brande and Hatchet. The result of the inquiries of these ingenious gentlemen, on this very interesting subject has been communicated to the scientific world in a paper printed in the Philosophical Transactions for the year 1810, entitled "Observations on the Effects of Magnesia, in preventing an increased formation of the Uric Acid, by William T. Brande." This gentleman (in a communication to Sir John Sinclair) says, that the best method of giving the magnesia, is in plain water, or milk, to be taken in the morning early, and at mid-day. If the stomach is weak, and this produ-

medicines improperly called lithontriptics, much relief may be obtained, and very often the stone may be passed, for the urethra is short and lax, so that calculi of great size have been voided. But when these means fail, an operation must be performed. This has been done during pregnancy,* but is only allowable in cases of great necessity. Sometimes the stone makes way, by ulceration, into the vagina.† It has even been known to ulcerate through the abdominal integuments.‡

In many cases the symptoms of stone are met with, although none can be found in the bladder. This is most frequently the case with young girls, previous to the establishment of the catamenia, or with women of an irritable habit. There is no organic disease, nor have I ever known it, in such people, end in a diseased structure of the bladder or kidneys; indeed, they rarely complain of uneasiness about the kidneys. I have tried many remedies, such as soda, uva ursi, narcotics, antispasmodics, tonics, and the warm and cold bath, but cannot promise certain relief from any one of these.§ In process of time, the disease subsides and disappears. The use of a bougie may be of service, for the state of the urethra

ces flatulency or uneasy sensations, some common bitters, such as gentian, may be taken with it; if it purges, a little opium may be added. He supposes its beneficial operation depends, on preventing the formation of acid in the stomach.

The dose of magnesia, he observes, must always depend upon the circumstances of the case;—*generally*, five grains twice or thrice a day to children ten years of age; fifteen or twenty grains to adults.

Mr. Brande has always given the common magnesia, although he remarks, that, the calcined may be occasionally used with advantage. For fuller information on this subject, the reader is referred to Brande's paper, above quoted, in the Phil. Trans. and to a letter from Sir John Sinclair, vide Eclectic Repertory, Vol. III. p. 120.

Dr. Gilbert Blane, so well known in the medical world, has also written an interesting paper on the effects of large doses of mild vegetable alkali, or potassa carbonata in gravel, and the beneficial effects of opium combined with it.

* Deschamps, Traite de l'Oper. de la Taille, Tome IV. p. 9.

† Hildanus, cent. I. obs. 68 and 69.

‡ Vide Case by Mr. Caumond, in Recueil Period.

§ In a case of this kind, described by Mr. Patton as a spasmodic affection of the neck of the bladder, calomel appeared to cure the complaint. London Med. Journal, Vol. X. p. 560. The use of the bougie may be proper.

often produces pain, not only in its course, but general uneasiness in the neighbouring parts, and, indeed, is the most frequent cause of sympathetic pain, or sensibility of the vagina or vulva.

Spasm of the orifice of the bladder, with an irritable state of the urethra, may succeed labour, or attend female diseases, and occasions great pain in voiding the urine. It requires anodynes, tepid fomentations, laxatives, and sometimes the gentle introduction of the catheter.

Induration, or scirrhus of the bladder, produces symptoms somewhat similar to calculus, but there is a greater quantity of morbid mucus mixed with the urine; and blood with purulent matter is discharged, when ulceration has taken place. No stone can be found, but the bladder is felt to be hard and thick. Sometimes it is much enlarged with such appearances, as give rise to an opinion, that the uterus is the part principally affected.* The scirrhus and ulceration may extend to the uterus and vagina. In this disease we must avoid all stimulants, and put the patient on mild diet; avoid every thing which can increase the quantity of salts in the urine; keep the bowels open, with an emulsion containing oleum ricini; and allay irritation by means of the tepid bath and opiates. Mercury, cicuta, uva ursi, &c. with applications to the bladder itself, have seldom any good effect, and sometimes do harm.

Chronic inflammation of the mucous membrane of the bladder, produces frequent desire to void urine, and the discharge of viscid mucus, which sometimes has a puriform appearance. Cicuta and balsam of copaiba seem to be the best remedies.

Polypous tumours† may form within the bladder, producing the

* Morgagni relates an important case, where there was a hard painful tumour in the hypogastric region, accompanied with fluor albus, uterine hemorrhage, and stillicidium of urine. After death, the bladder was found very large and scirrhous, with two large bodies in the cervix, preventing the urine from being retained The uterus was diseased only in consequence of its vicinity to the bladder. Epist. XXXIX. art. 31.

† Of this disease I have never seen an instance; but Dr. Baillie mentions a case, in which the greater part of the bladder was filled with a polypus. Morbid Anat. p. 298.

usual symptoms of irritation of that organ. Most dreadful sufferings have been caused by worms in the bladder.

In consequence of severe labour, or the pressure of instruments, the neck of the bladder may become gangrenous, and a perforation take place by sloughing. The woman complains of soreness about the parts, and does not void the urine freely. In five or six days the slough comes off, and then the urine dribbles away by the vagina. In all cases of severe labour, and indeed in every case when the urine does not pass freely and at proper intervals, and especially if there be tenderness of the parts, we must evacuate the water, in order to prevent distension and farther irritation of the bladder; and the parts must, if there be a tendency to slough or to ulcerate, be kept very clean, and be regularly dressed, in order to prevent improper adhesions. If the bladder should give way, we must try, by keeping in attentively an elastic catheter,* to make the urine flow by the urethra, and then perhaps the part may heal. This is materially aided by introducing a sponge into the vagina so as to press on the aperture. It would appear that a very good method of doing so, is to fix a thin piece of sponge on the side of an elastic-gum bottle, which is to be placed in the vagina, so that the sponge be applied to the aperture. The urine is thus retained and should be drawn off at short intervals. The aperture, if the treatment have been begun as early as the tenderness of the parts permit, may thus gradually contract, and at last be shut altogether.† If it remain small and callous, it may be touched with caustic. In a curious case I met with, there was an attempt by nature, to plug up the opening.‡ Puzos justly remarks, that it is always the bladder, and not the urethra, that suffers.

* This succeeded in a very bad case related by Sedilliot, Recueil Period. Tome I. p. 187.

† Vide some cases in Med. Chir. Trans. Vol. VI. p. 583.

‡ The patient to whom I allude had, I understood, four years before her death, been delivered with the forceps, and soon afterwards had incontinence of urine. I found a large perforation in the bladder, exactly resembling the fauces without an uvula. The uterus was a little enlarged and indurated; and its mouth, which was ulcerated and fungous, lay in this opening, projecting into the bladder, and closing up the communication betwixt the bladder and vagina.

Sometimes, after a severe labour, the woman is troubled with incontinence of urine, although the bladder be entire. This state is often produced directly by pressure on the neck of the bladder; sometimes it is preceded by symptoms of inflammation about the pelvis, and, in such cases, the os uteri is often found afterwards to be turned a little out of its proper direction, and the patient complains much of irregular pains, about the hypogastrium and back. When she is in bed, some of the urine collects in the vagina, and comes from it when she rises; after she is up, it comes from the urethra alone, which distinguishes this from the complaint last described. Time sometimes cures this disease. The cold bath is useful, unless it increase the pain; and in that case, the warm bath should be employed. It may be proper to use the bougie daily, and also tincture of cantharides, and pressure.

The bladder may descend, in labour, before the uterus, producing much pain; or it may prolapse for some time previous to labour, attended with pains resembling those of parturition, and sometimes with convulsive or spasmodic affections.* When the prolapsus vesicæ takes place as a temporary occurrence during labour, or antecedent to parturition, we must be careful not to mistake the bladder for the membranes, for thus irreparable mischief has been done to the woman. The bladder, when protruded, is felt to be connected with the pubis. It retires when the pain goes off. If the patient be not in labour, the uneasiness is to be mitigated by keeping the bladder empty, and allaying irritation with opiates, and taking a little blood, if feverish or restless. If labour be going on, the bladder must likewise be kept empty, and may, during a pain, be gently supported, by pressing on it with two fingers in the vagina, by which the bladder is preserved from injury. In the unimpregnated state, it sometimes descends betwixt the vagina and pelvis, so as to form a tumour within the vagina, or at the vulva. It produces a procidentia of the vagina, but the tumour is formed at the anterior part of the vulva, instead

* In a case related by Sandifort, the suppression of urine was always attended with convulsive cough. Lib. I. cap. 5. And in a case related by Dr. J. Hamilton, where prolapsus took place before parturition, the muscles of the body were spasmodically agitated. Cases, &c. case 9.

of the back part, as in the ordinary procidentia. There is some degree of bearing-down pain in walking, particularly when the bladder is full. Some patients complain of pain in the groin, others at the navel, and some suffer little or no inconvenience, except pain about the bladder when it is distended. If the disease have continued long, or if the procidentia of the anterior part of the vagina be considerable, the os uteri is directed backward: and when the finger is introduced into the vagina, the anterior part of that canal can be pushed up farther than usual over the fore part of the cervix uteri, which then appears to be elongated, and perhaps in some cases the anterior lip is actually lengthened. In a case dissected by my brother, the bladder was found to form a hernia on both sides of the pelvis, hanging like a fork over the urethra. This procidentia is called a hernia* vesicalis, and is often attended with suppression of urine. If this be inattentively examined, it may be taken for prolapsus uteri; but it will be found to diminish, or even disappear, when the urine is voided; and by pressure the urine may be forced through the urethra.

The hernia, or procidentia vesicalis, is to be remedied by the use of a globe pessary, or one of an egg-shape; and if there be much relaxation of the vagina or parts of the outlet of the pelvis, astringent injections and an elastic support acting on the perineum will be useful. Straining and all muscular exertion should be avoided. Sometimes it is combined with calculus in the bladder. In this case, it has been proposed to open the bladder, extract the stone, and keep up a free discharge of urine through the urethra, in order to allow the communication with the vagina to heal. Deschamps advises, that the opening should be made near the pubis, and not at the posterior part of the tumour, lest that part of the bladder be cut, which when the tumour is reduced, would communicate with the abdominal cavity. I can see no necessity for making any change in the mode of extracting the stone on account of the procidentia.

* Vide the Memoirs and Essays of Verdier and Sabbatier, and Hoin. Sandifort, Diss. Anat. Path. lib. 1. cap. iii.; and Cooper on Hernia, part II. p. 66.

§ 23. EXCRESCENCES IN THE URETHRA.

Excrescences may, notwithstanding the opinion of Morgagni, form in the course, or about the orifice of the urethra,* and generally produce great pain, especially in making water; on which account, the disease has sometimes been mistaken for a calculous affection. The agony is at times so great, as to excite convulsions, and it is not uncommon for the patient to have an increase of her suffering about the menstrual period. The tumour is vascular, florid, moveable, and exceedingly tender. When excrescences grow about the orifice of the urethra, they are readily discovered; but when they are high up, it is much more difficult to ascertain their existence. Dr. Baillie† says, they cannot be known, but by the sensation given by the catheter passing over a soft body. They, however, in one case, were discovered, by turning the instrument to one side, so as to open the urethra a little.‡ When their situation will permit, it is best to extirpate them with the knife or scissors; or if near the orifice, as they generally are, a ligature may be applied. Sometimes they have yielded to the bougie, though they had returned after excision.§ The removal of large excrescences, has occasionally been attended with very severe symptoms.‖

* Mr. Sharp mentions a case where they grew in small quantity upon the orifice, producing excruciating torment till they were extirpated. Critical Inq. p. 168.

† Morbid Anatomy, p. 321.

‡ In the instance related by Mr. Warner, the urine was voided in drops with great pain, especially about the menstrual period, and she sometimes even had convulsions. He dilated the urethra, by inclining the catheter to one side, and thus saw two excrescences near the upper end. He divided or laid open the urethra, and cut off the excrescences successfully with scissors. Cases, p. 309.

§ Broomfield's Surgery, Vol. II. p. 296.

‖ In the patient of Mr. Hughes, the disease was taken at first for prolapsus uteri, for there was a substance filling the os externum, and appearing without the vulva. It was a spongy excrescence, from the whole circumference of the meatus. It was drawn out with a thread passed through it, and then cut off. Strangury, with pain above the pubis, and fever, took place, on which account the catheter was introduced. Suppression of urine repeatedly occurred; and as it was often difficult to introduce the catheter, the semicupium was employed, and always with advantage; but once after it she became faint, and the limbs

The daily use of the bougie, for some time after extirpation, is of service.*

Sometimes the urethra is partially, or totally inverted,† forming a tumour at the vulva, attended with difficulty and pain in voiding urine. A slight inversion may be relieved by a bougie; when there is a considerable prolapsus, the part may be cut off. The urethra is sometimes contracted by a varicose state of its vessels, or by a stricture; but these are not common occurrences. In continued irritation of the urethra, with difficulty of voiding water, the bougie is often of great service, even although there should be no contraction of the canal itself. Sometimes the urethra is preternaturally dilated,‡ but this does not necessarily cause incontinence of urine.

The mucous coat of the urethra is sometimes thickened, and its vessels become varicose. This produces general swelling of the urethra, felt by the finger in the course of it, pain on pressure, and *in coitu*, with a discharge of mucus, and tormenting desire to make water. When the patient bears down, the urethra is partially inverted, and appears swelled and vascular. These vessels should be scarified, the part bathed with an astringent lotion, and gentle pressure made with a thick bougie.

were convulsed. A stricture being suspected at the upper part of the urethra, a bougie was introduced, and kept in the canal, which removed the symptoms. Med. Facts and Obs. Vol. III. p. 26.

* In Mr. Jenner's case the irritation of the bladder was great, and the menses were irregular. A fungus was found, filling the orifice of the urethra; this was cut off, and the bougie used for an hour every day for a fortnight; a little before the extirpation, a hemorrhage took place from the excrescences. Vide Lond. Med. Journal, Vol. VII. p. 160.

† M. Sernin relates a case of a girl, eleven years of age, who from her fifth year had been subject to frequent attacks of difficulty in voiding the urine. He had an opportunity of examining her after a violent attack, and found a cylindrical body, 4 inches long, projecting from the vulva; and whenever she attempted to make water, this projection swelled up. It was amputated with success. Recueil Period. Tom. XVII. p. 304.

‡ In Dr. Chamberlain's patient, who had the hymen imperforated, the urethra was so dilated as to admit the finger; and Portal found it, in an analogous case, dilated so as to form a cul-de-sac, admitting the point of the thumb. Cours d'Anat. Medicale, Tom. III. p. 476.

§ 24. DEFICIENCY AND MALFORMATION OF THE UTERUS.

The uterus may be larger than usual, or uncommonly small,* or it may be altogether wanting.† Unless these circumstances be combined with some deficiency, or unusual conformation of the external parts or vagina, the peculiar organization is not known till after death. It is, however, not uncommon for the external parts to be very small, when the uterus is of a diminutive size; and when it is altogether wanting, the vagina is either very short, or no traces of it can be found. In either of these cases, no attempts should be made to discover a uterus by incisions, unless, from symptoms of accumulation of the menses, we are certain that a uterus really exists.‡ In some instances, the skin at the point, corresponding to the situation of the orifice of the vagina, has been pressed in, so as to form a short sac, which, in the erect posture, prolapsed like a bag. This has been cut in search of the uterus, and nothing found but cellular substance. It has been supposed that peculiar feelings about the monthly period, or the existence of sexual desire, indicated the presence of ovaria. These

* Morgagni mentions a porter's wife, in whom the uterus was found not above an inch long, and without any ovaria. The pudendum was extremely small, and there was scarcely any appearance of a clitoris. In the Phil. Trans. for 1805, there is a case where the uterus of a woman, 29 years of age, was not larger than in the fœtal state, and scarcely any appearance of ovaria. She ceased to grow at ten years of age, had no hair on the pubis, never menstruated, and had an aversion to men. I have seen the uterus of the adult not larger than that of a child; the woman never menstruated, and had very flat breasts.

† Columbus dissected a woman who always complained of great pain in coitu. The vagina was very short, and had no uterus at its termination.

Fromondus relates an instance, where the place of the os externum was occupied with a cartilaginous substance.

Morgagni was consulted by a barren woman, whose vagina was only a third part of the usual length, and its termination felt firm and fleshy. He advised a dissolution of the marriage.

M. Meyer, in Schmucker's Essays, mentions a case where the vagina and uterus were wanting, but the ovaria existed. The labia and clitoris were small, and there was no nymphæ. Mr. Ford dissected a child who had no vagina, uterus, or ovaria. The urethra and rectum terminated close to each other. Med. Facts, Vol. V. p. 92.

‡ Nabothus mentions a rash operator, who undertook, by incision, to find the uterus; but after cutting a little, he came to some vessels which obliged him to stop.

have sometimes been found attached to a mass of cellular substance, or even to the bladder.

The uterus may be double:* in this case there is sometimes a double vagina, but generally only one ovarium and tube to each uterus. This conformation does not prevent impregnation.

The uterus is sometimes divided into two, by a septum stretching across at the upper part of the cervix;† or the os uteri, is almost, or altogether shut up;‡ by a continuation of the lining of the womb or vagina, or by adhesion, consequent to ulceration, or by original conformation; and in this last case, the substance of the os uteri is sometimes almost cartilaginous. The menses either come away more or less slowly, according to the size of the aperture, or are entirely retained when there is no perforation. As long as the menses are discharged, nothing ought to be done; but if they are completely retained, and violent and unavailing efforts made for their expulsion, an opening must, as a matter of necessity, be made from the vagina. In such cases, the uterus has been tapped with success;§ but it has also happened, that fatal inflammation has succeeded the operation.

The vessels are sometimes enlarged; and I have seen the spermatic veins extremely varicose, in an old woman who had been subject to piles; but I do not know that any particular inconvenience results from the veinous enlargement.

* Vide Hist. de l'Acad. de Sciences, 1705, p. 47.—Haller Opusc. path. 60. Acrell's cases.—Purcell in Phil. Trans. LXIV. p. 474.—Canestrini in Med. Facts, Vol. III. p. 171.—Valisneri met with a double uterus and double vulva. Opera, Tom. III. p. 338.—Dr. Pole describes a double uterus, in the 4th Vol. of Mem. of Medical Society, p. 92.

† Baillie's Morbid Anatomy, chap. xix.

‡ Littre found it almost closed, by a continuation of the inner surface of the vagina, Mem. de l'Acad. de Sciences, 1704, p. 27; and in the seventh month of pregnancy, closed by a glandular substance. 1705, p. 2.—Morgagni found it shut with a membrane. Epist. XLVI. art. 17.—Boehmer quite shut up.—Obs. Anat. fasc. 2. p. 62.—Ruysch saw it so small as scarcely to admit a pin; and Sandifort so well closed, that nothing but air could be forced through it. Obs. Anat. Path. lib. II. c. ii. p. 67.

§ The menses being retained, and great pain excited, they were let out with a trocar by Schutzer. Vide Sandifort, p. 69.

§ 25. HYSTERITIS.

The uterus is subject to inflammation; but in the unimpregnated state, it is not common for the womb to be the original seat of acute inflammation. After parturition, it is very frequently inflamed; and this will hereafter be considered. Inflammation is discovered by pain in the hypogastric region, accompanied with tenison, and the part is tender to the touch; there is acute pain stretching to the back and groins; the bladder is rendered irritable; and acute fever accompanies these symptoms. Blood-letting, purges, fomentations, and blisters are to be used, as in other cases of peritoneal inflammation. Wounds of the uterus are dangerous, in proportion to the inflammation they excite.*

Chronic inflammation of the cervix uteri is not uncommon. The os uteri is open, soft, and tender to the touch. The cervix is not materially affected in size or hardness. There is a considerable discharge of white mucus, which sometimes becomes puriform, and this is often mixed with blood; or there may be very considerable uterine hemorrhage. The patient feels pain in the uterine region, but often complains more of pain in some distant part of the abdomen, not unfrequently near the liver. There is little fever, but the patient becomes weak from discharge, irritation, and those hysterical affections which may accompany the complaint. Examination discovers the uterus to be swelled, and it is painful when pressed with the finger.

The warm sea-water hip-bath, gentle saline purgatives, injection of decoction of hemlock, mild diet, and the use of cicuta as an anodyne, are proper at first. Gardien, I find, recommends the use of emollient injections, conveyed by a pipe, connected with a receptacle so large as to contain as much fluid as will permit of a continued flow for eight or ten minutes. Of this I have, as yet, no experience. Afterwards, when the symptoms are so far subdued, the use of the cold sea bath, bark combined with bitters,

* In one instance the woman was murdered, by thrusting a piece of glass up the vagina; and Haller notices a fatal case, in which a piece of lead was thrust into the uterus.

and mild injections of vegetable astringents, are proper. In obstinate cases, mercury ought to be tried; with a view of altering the action of the parts; but it must be done cautiously, as it is hurtful when it excites without rectifying the action.

When there is considerable uterine pain, or much sensibility of the neighbouring parts, the introduction, at night, into the vagina, of a few grains of extract of hemlock, is of service. Pain about the groin is relieved by leeches, and the application of a blister kept open by savine ointment.

§ 26. ULCERATION OF THE UTERUS.

The uterus may, from irritation, become ulcerated like any other part; purulent matter is discharged, the patient feels pain in coitu, or when the uterus is pressed, and sometimes the finger can discover the ulcer. Simple ulceration is very rare, and I apprehend, will always heal, by keeping the parts clean with mild injections. Ulceration from morbid poison is more frequent. Of this kind is the phagedena, a most obstinate and dreadful disease of the womb, which begins about its mouth, and goes on, gradually destroying its substance, until almost the whole of it be removed; and sometimes it spreads to the neighbouring parts. This disease is marked by excruciating pain of the burning kind, in the region of the uterus; copious, fœtid, purulent, or sanious discharge, alternating with some hemorrhage; small but frequent pulse, wasting of the flesh, and occasionally swelling of the inguinal glands: no tumour is felt externally, but the belly is flat. Examination, per vaginam, discovers the destruction which has taken place, and how far it has proceeded. It also ascertains, that the part which remains is not enlarged.

On inspecting the body after death, the pelvis is generally found filled with intestines, matted, and adhering to the pelvis, and to one another. In the midst of the mass, there are sometimes one or two simple abscesses, containing healthy pus. On tearing out the mass, the uterus is discovered to be eat away all to the fundus, or a small part of the body. The substance is very little thickened, but resembles soft cartilage, with here and there small

cysts, not larger than pin heads. The ulcerated surface is dark, flocculent, and has a dissolved appearance, whilst the substance in its immediate vicinity is vascular and livid. The rapidity of the destruction is various in different cases. It is very difficult to cure this ulcer, or even to check its progress. Sometimes mercury has effected a cure, either by itself, or combined with cicuta; or hyocyamus, or other narcotics, have been given alone. Nitrous acid occasionally gives relief, and when greatly diluted so as to be weaker than vinegar, forms a very proper injection. A very weak solution of nitrate of silver, is also a good topical application. Should the pain be great, tepid decoction of poppies, or water with the addition of tincture of opium, will be of service as an injection. Fomentations to the lower belly, and friction with camphorated spirits on the back, also give relief; but very frequently opium, taken internally, affords the only mitigation of suffering, and the quantity required is often great.

There is another kind of ulcer, which attacks the cervix and os uteri. It is hollow, glossy, and smooth, with hard margins; and the cervix, a little beyond it, is indurated, and somewhat enlarged, but the rest of the uterus is healthy. The discharge is serous, or sometimes purulent. The pain is pretty constant, but not acute; and the progress is generally slow, though it ultimately proves fatal, by hectic. In this, and all other diseases of the uterus, the morbid irritation generally excites leucorrhœa, in a greater or less degree; but examination ascertains the morbid condition of the part. Although this disease be very different in its nature from the former, yet the mode of treatment is much the same. Material benefit may be derived from the warm salt-water bath, and the regular use of a solution of some saline purgative, or a laxative mineral water, such as that of Harrowgate or of Cheltenham. This is especially the case, when the ulcer is small, or when the part is only indurated, ulceration not having yet taken place. In this stage, the cervix is felt hard and sensible to the touch, and there is leucorrhœa, and pain in the uterine region. A gentle mercurial course is occasionally of service. Some may consider this disease as a species of cancer, but the ulcer is never fungous.

Excrescences of a firm structure, and broader at the extremity than at the attachment, may spring from the os uteri, and generally, I apprehend, originate from a lobulated or fissured state of the parts. They bleed readily and profusely; but when not irritated the discharge is serous, and so great, that thick folds of cloth are soon wet as if the liquor amnii had been coming away. It is evident that astringents cannot effect a cure, as they do not alter the nature of the substance which secretes. If a ligature could be passed so as to destroy the circulation in the excrescence, a cure might be expected. When this is impossible, we can only palliate symptoms.

A peculiar growth is described by the late Dr. Clarke,* under the name of cauliflower excrescence, which is probably of the nature of that I speak of. It springs from the os uteri, the base is broad, the surface granulated, the substance brittle, and the fragments broken off are white. Pressure does not give much pain, but the patient has more or less at all times; yet not of the lancinating kind. The discharge is at first like fluor albus, and stiffens the linen, though frequently it becomes watery and transparent. It is so great, that when the excrescence is large, it wets ten or twelve napkins daily, and occasions much debility. The progress is variable, and sometimes is so rapid, that the pelvis is filled by it in nine months. The only treatment that bids fair to give relief, is the application of the ligature; but the peculiarity is, that when the vessels are constricted by this during life, or collapse after death, the solidity of the tumour is lost, and it resembles merely a glairy substance.

Venereal ulceration may, although the external parts be sound, attack the uterus, producing a sense of heat with pain. There is at first, very little discharge, and this consists of mucus; but if the disease be allowed to continue, fœtid purulent matter comes away. The ulcer is at first small, and there is no hardness about the os uteri, nor is it perceived to be dilated; but it is painful to the touch, and sometimes bleeds after coition. The purulent discharge appears earlier than in cancer, but the health for a time is

* Vide Trans. of a Society, &c. Vol. III. p. 321.

not affected. Then the ulcer spreads, and may destroy a great part of the womb and bladder, and occasion fatal hectic. The history of the patient may assist the diagnosis. The cure consists in a course of mercury, which I have always found produce a good effect soon after the commencement.*

§ 27. SCIRRO-CANCER.

Scirro-cancer generally, or rather I may say always, begins in the cervix uteri. It may take place in the prime of life, but is most frequent about the time of the cessation of the menses. It begins with leucorrhœal discharge, succeeded, after a longer or shorter time, by a feeling of heaviness or heat, and darting pains about the hypogastrium, aching in the back, dull pain about the upper and inner part of the thighs, with a sense of bearing down, together with dysuria and mucous discharge with the urine; glowing heat, or sometimes stinging pain betwixt the pubis and sacrum, with itchiness of the vulva. Menorrhagia very early attends the complaint, and sometimes is the most prominent symptom for a considerable time, as the pain, and other effects of the disorder, may be late of appearing. The patient is often troubled with flatulence, heartburn, and sometimes with vomiting, and cutaneous eruptions from sympathy with the stomach. The general health soon suffers, the countenance becomes sallow, the pulse quickens, the strength declines, and the body wastes. Presently a fœtid, purulent, or bloody matter is discharged, which indicates that a cyst has burst, and the disease has proceeded to ulceration. Repeated hemorrhages are now apt to take place, and hectic is established. The pain is constant, but subject to frequent aggravations, and the weakness rapidly increases. At length the pain, fever, want of rest, discharge, and loss of blood, completely exhaust the patient; and death terminates at once both her hopes and sufferings.

As first, by examination per vaginam, the uterus is felt as if it were enlarged; the cervix is apparently expanded, and the os uteri hard, open, irregular, and more sensible to the touch, a cir-

* Vide Med. Comment. Vol. XIX. p. 257.—Pearson on Cancer, p. 119.

cumstance which causes pain in coitu. A little blood is often observed on the finger after an examination. In some time after this, the os uteri is turgid, with many irregular projections like piles, as if it contained small cysts, and presently it is felt to be ulcerated and fungous; but sometimes the fungi are less perceptible, deep excavations being formed, the sides of which, however, after death, are found to be fungous.

The cervix uteri is sometimes totally indurated, and considerably enlarged, before ulceration takes place, or has imbedded in it a small tumour; but, in other cases, the augmentation is much greater after ulceration, than before it.* If the disease originally formed a distinct tumour in the cervix, that tumour may become as large as the fist, adhering to the pelvis so that it cannot be moved, and pressing so much on the rectum or bladder, according to its situation, as to give rise to much obstruction in the evacuations from either of these parts. The uterus itself is seldom much enlarged in genuine cancer; but it is possible whilst the cervix is affected with this disease, that the body of the uterus may have undergone a different morbid change. The tubes and ovaria have been said to participate in the disease.†

In some patients the disease proves fatal very early, if there be profuse hemorrhage; in others great devastation takes place, and the bladder‡ or rectum§ are opened. In most cases, the va-

* Vide Stalpart Vander Wiel, obs. 87.—Segerus in Mis. Cur. 1671, obs. 121. Notwithstanding these cancerous excrescences about the os uteri, a woman may conceive. Dr. Denman relates a case where there was a large excrescence in the gravid state, with profuse bleeding. The head of the child was lessened, but the woman died undelivered. Vol. II. p. 65. When the os uteri has been affected with scirrhous, and the woman has conceived, the uterus has sometimes been ruptured, or the woman died undelivered. Hildanus, cent. I. obs. 67. Horstius Opera, Tom. II. lib. 2. obs. 5. Blancard Anat. p. 233. Hist. de l'Acad. des Sciences, 1705, p. 52.

† Vide Prochaska Annot. Acad. fasc. 2d.

‡ Le Dran attended a patient who had all the symptoms of scirrhous uterus, and, by examination, fungous excrescences were found shooting down into the vagina. The pain was continual, and could only be mitigated by the constant use of opium. Urine was discharged by the vagina, and after death the bladder was found to be perforated. The fundus and body of the uterus were not much diseased.

§ M. Tenon found, in a case of cancerous uterus, all the posterior part of the

gina becomes hard and thickened, or irregularly contracted with swelled glands, in its course.

On examining the diseased part after death, it is found to be thickened and indurated, and sometimes its cavity is enlarged. The substance is of a whitish or brownish colour, intersected with firm membranous divisions; and betwixt these are numerous small cysts, the coats of which are thick and white. They contain a vascular substance, which, when wiped clean, assumes a light olive colour. In proportion as the disease advances, some of the cysts enlarge and thicken still more; and, when opened, are found to contain a bloody lymph, and to have the inner surface covered with a spongy vascular substance, similar to that which fills the small cysts, but rather more resembling fungus. Presently some of these cysts augment so much as to resemble abscesses, though they are not, properly speaking, abscesses, and soon afterwards they burst.

It is extremely rare for a cyst to burst, or fungi to shoot out on the exterior surface of the uterus, which is covered with the peritoneum. The position of the uterus is often natural, but sometimes it is inclined to one or other side, or approaches to a state of retroversion.

As this disease is apt to be mistaken for fluor albus, menorrhagia, nephritis, or dyspepsia, it is of great importance that the practitioner should be on his guard, and examine early and carefully per vaginam. Much harm is done by the use of extringent injections meant to cure the supposed fluor albus.

This is a very hopeless disease, but still much may be done to check its progress, or mitigate its symptoms. When uneasy sensations, about the cessation of the menses, indicate a tendency to uterine disease, we find advantage from the insertion of an issue in the arm or leg, the use of laxative waters,* and spare diet,† and

womb ulcerated, the rectum diseased, and a communication formed betwixt them.

* Rœderer relates a case where scirrhous swelling was cured by keeping the bowels open, and giving every third evening, from ten to twenty grains of calomel.—Haller Disp. Med. Tomus IV. p. 670.

† Absolute abstinence has been recommended by Pouteau, Œuvres Post. Tom. I. p. 105. He relates a case, which was cured by confining the patient to *eau de*

flannel dress. If by examination we discover any alteration in the shape, size, or sensibility of the womb, we must have recourse to the daily use of from two to three drachms of sulphas potassæ cum sulphure; and if this lose its effect, some other laxative must be added. The tepid sea water bath every night is likewise of great service. When there is much sense of throbbing, heat, or pain about the pelvis, taking blood from the loins by cupping is of service, and the patient should keep in a horizontal posture as much as possible. When the disease has evidently taken place, we must still persevere in the same plan, and avoid such causes as excite action in general; for the longer we can keep a scirrhus from going into a state of activity and inflammation, the longer do we keep the disease at bay. It is therefore scarcely necessary to add, that if the patient be married, she must not sleep with her husband. We keep the parts clean by injecting tepid water, or decoction of camomile with hemlock or opium; allay pain by anodynes; attend to the state of the bowels; and correct stomachic affections by bitters, and other suitable remedies. Mercury, antimony, iron, gold, arsenic, sarsaparilla, aconitum, cicuta, &c. have been given internally, but have seldom a good effect. Indeed, no medicine can be depended on for even suspending the progress of the disease, but many may do harm. The most rational practice is, to adopt such a mild system as shall keep down action, and prevent the parts from passing on to ulceration. Whilst every stimulus is shunned, we may, in the more vigorous constitution, find it useful to enjoin considerable abstinence in diet, and even all such mild articles of food or beverage as ferment in the stomach, as this state of the aliment aggravates the symptoms. On the other hand, if we find that the abstemious plan, in any case, by weakening too much, permits the morbid action to make progress, we must change the regimen. When ulceration has taken place, much may still be done by attention to the use of the syringe, and the removal of acrid matter. It has been said, that very weak phosphoric acid, injected to the uterus, allays pain more effectually than anodynes,

glace.—Mr. Pearson, p. 113. gives two successful cases. In the first, the uterus was enlarged and retroverted, but by very spare diet, was restored to its natural state.

but this I am unable to confirm by experience. It has been proposed to produce, with an extracting instrument, a prolapsus uteri, and then cut off the protruded womb. Several years ago, Dr. Osiander of Gottingen, published an account of his mode of extirpating the cancerous neck of the womb, by transfixing it with ligatures, and thereby pulling it so low, and keeping it so steady, as to enable him, with a bistory, to cut off the diseased part. The bleeding is restrained by astringents. At the time of publication, he says he had performed the operation nine times, with success. Dupuytren has also performed the operation. In one instance, he required to remove, at two different times, the diseased substance, as it still returned. Recamier tried the effect of caustic conveyed by a speculum, but the result has not yet been published.* This operation has not yet been performed in this country, but this much may be said in favour of it, that genuine cancer is, if left to itself, always a mortal disease.†

§ 28. TUBERCLES.

Tubercles are common in the uterus, insomuch that M. Bayle says, that in seven months he met with fourteen cases. They consist at first of fleshy matter, but in process of time become more like cartilage, or even bony, especially on their surface.‡ On examining the tumour, it is sometimes found to be intersected with membranous divisions; and a section always exhibits a pretty compact granulated surface without vessels. A tubercle may take place in one spot, and all the rest of the uterus may be healthy, and nearly of the natural size. The magnitude of the tubercle is very variable, and it may either project on the outer surface,§ or

* Vide Dict. des Sciences Medicales, art. Matrice et Hysterotomie.

† Vide Edin. Journal for July, 1816.

‡ Sandifort Obs. Anat. Path. lib. I. cap. viii.—Bayle in Jour. de Med. Tome V. p. 62.—Murray de Osteosteamate, p. 14. et. seq. Gardien, T. 1. p. 421.

§ Professor Francis gives the history of an enormous fleshy tubercle, proceeding by a small pedicle from the fundus of the uterus, which, together with the excrescences connected with it, weighed rather more than 100 pounds. *Ed.*

within the cavity of the womb; and in this last case, the adhesion to the surface of the cavity is generally slight* after the tubercle has fully projected. In this it differs, even in its most detached state, from polypus, which is attached not by cellular substance, but by a pedicle. One or more of these may be thrown off, with pains like those of labour. Sometimes there are a great many tubercles, which are found in various stages of projection, and the uterus may become greatly enlarged, and very irregular externally.†

In one case the size of the womb was large, and two thick hard ridges could be felt in the abdomen, extending obliquely up by the sides of the umbilicus. The lower and anterior part of the womb was large, and filled the brim of the pelvis like a child's head; whilst near the promontory of the sacrum, the os uteri was felt healthy, though compressed. This woman had no complaint except what proceeded from bulk; the bladder, contrary to expectation, was not in any degree affected; the stools easy, and menstruation regular.

I have never seen the tubercle end in ulceration, nor the substance of the uterus, although thickened, have abscess formed in it. This observation I find confirmed by other practical writers, who state that it tends not to suppuration, but ossification. The effects of this disease are chiefly mechanical, and often altogether trifling; at other times, we have a pain in the back, and sometimes in the hypogastrium, which, if there be much enlargement of the womb, is swelled, hard, and irregular, dyspeptic symptoms, leucorrhœa, and at length feverishness, and gradual loss of strength. The progress is generally slow, unless the cervix uteri, which is always sound with regard to this disease, be affected with phagedena or cancer, or unless simple inflammation be excited by pressure on some neighbouring part. That is to say, this disease, occurring by itself, is not dangerous or hurtful, except by mechanical or sympathetic irritation. During the active stage, pain is per-

* Baillie's Morbid Anatomy, chap. xix.

† I have found the uterus as large as a child's head of a year old, with many projections and tubercles.—Peyer has a similar case, Parerg. Anat. p. 131.

haps felt, but it ceases when the tumour ceases to grow, which it often does. I have stated that the cervix is not attacked by this disease; but it may commence in the lower part of the body of the uterus, and extend downwards as well as outwards, so as to appear to have begun in the cervix. Menstruation may be rendered irregular, but sometimes continues unaffected.

This disease can only be confounded with diseased ovarium, but it is harder when felt through the belly, not so moveable at first, and a difference may generally be felt per vaginam. It may be combined with tumour of the ovarium. On introducing the finger into the vagina in the early stage, the uterus is felt enlarged, and bulging either before or behind; and the lump is a little painful when pressed. It is felt to make a part of the womb, and very often is situated on the anterior surface, in contact with the bladder. The cervix may be a little developed, but is healthy.

No remedy has any power in removing the diseased substance, and therefore our treatment consists in palliating symptoms, especially in attending to the bladder and bowels. We also upon general principles keep down activity, and guard against inflammatory action. The antiphlogistic regimen should be pursued in moderation. The bowels especially should be kept open, and every source of irritation removed. The tepid bath is useful. Women may live a long time, even although these tumours acquire considerable magnitude.

Sometimes the whole uterus is a little enlarged, and changed into a white cartilaginous substance, with a hard irregular surface; or it may be enlarged and ossified,* and these ossifications may take place even during pregnancy.† Steatomatous or atheromatous

* Vide Mem. de l'Acad. de Chirurg. Lieutaud relates a case of a woman who had a tumid belly, and complained of great pain. The womb was not much larger than usual, but it was almost bony. Hist. Anat. Med. p. 320.—Grandchamp found an osseous tumour, as large as the fist, inclosed in a sac, betwixt the uterus and bladder. It produced constant ischuria, relieved only by lying on the back. Med. and Phys. Journal, Vol. III. p. 587.

† Vide Observ. on Abortion, 2d edition, p. 37.

tumours of various sizes*, or sarcomatous† or scirrhus-like‡ bodies, may be attached to the uterus. All these diseases sometimes at first give little trouble. Even their advanced stage has no pathognomonic mark, by which they can be discovered, as they produce the usual effects of uterine irritation. I must also add, that they are very little under the power of medicine. The most we can do, is to palliate symptoms; by which, however, we greatly meliorate the condition of the patient.

§ 29. SPONGOID TUMOUR.

The uterus is more frequently affected with spongoid tumour than is supposed; many cases of that disease passing for cancer. This is a firm, but soft and elastic tumour, the substance of which bears some resemblance to brain, and contains cysts of different sizes, filled with red serum or blood, or bloody fungus, according to circumstances. There is no certain way of distinguishing or discovering this disease in its early stage, for it often gives very little trouble, and any symptoms which do occur, are common to other diseases of the womb. The tumour, however, enlarges, and can at length be felt through the abdominal parietes. It is soft and elastic, and on the first application of the hand, feels very like a tense ventral hernia. There may be two or more tumours of unequal sizes in different parts of the belly, which can be felt to have a connexion with each other, and may frequently be traced to the pubis. *Per vaginam*, the state varies in different cases; but by pressing on the external tumour at the same time, we discover its connection with the womb below. We may find ulceration, or the os uteri soft, and tumified, and opened, or the posterior lip may be lost in a soft elastic tumour, and quite obliterated, whilst the

* Vide Rhodius, cent. III. ob. 46.—Bœhmer Obs. Anat. fasc. 2d.—Stoll Ratio Med. part II. p. 379.

† Vide Friedus, in Sandifort's Observ. lib. I. c. viii. and a case by Sandifort himself, where the tumour adhered by a cord, lib. IV. p. 113.

‡ Baader Obs. Med. ob. 29. p. 170.

anterior one, after a pretty careful examination, is felt high up, and apparently sound. Pressure seldom gives pain, till ulceration is about to take place, and no blood is usually observed on the finger after examination, unless a fungous has protruded. So far as I have seen, fluor albus is a rare attendant on this disease in the early stage, and little inconvenience is at that period produced, except what may sometimes result from pressure on the bladder, causing strangury or suppression of urine, attended with fits of considerable pain, like those excited by a stone. Slight discharges of blood generally attend the formation of the disease; and at this early stage, the os uteri, and sometimes the cervix, may be felt tumid, smooth, and elastic. The complexion is sallow, but the health is tolerably good, till ulceration or inflammation take place. Ulceration may happen in different parts; it may be directed to the vagina, and then we have fœtid bloody discharge, or sometimes considerable hemorrhage, and ultimately the bladder or rectum is involved in the destruction: or bloody fungus may protrude from the exterior surface of the uterus into the general cavity of the abdomen, and at length the bowels become inflamed and glued together: or the tumour may adhere to the parietes of the abdomen, and the skin after becoming livid gives way, and a fungus shoots out from the belly. As the disease advances towards ulceration, the health is more impaired, hectic fever takes place, and the patient is ultimately cut off.

The whole treatment, I am sorry to say, consists in palliating such sympathetic or local symptoms as may arise in the course of the disease.

[§ 30. CAULIFLOWER EXCRESCENCE FROM THE OS UTERI.

Dr. John Clarke of London considers himself as the first writer who has taken notice of this disease.

The cauliflower excrescence, according to him, arises always from some part of the os uteri. As several of the early symptoms are not very distressing to the patient, the tumour in the beginning is rarely the subject of medical attention. The first changes of structure have therefore not been observed. In general the tumour

is not less than the size of a blackbird's egg. At this period it makes an irregular projection, and has a base as broad as any other part of it, attached to some part of the os uteri. The surface has a granulated feel, considerable pressure on handling it, does not occasion any sense of pain. The remainder of the os uteri, will at this period, be found to have no sensible alteration of structure. By degrees more and more of the circle of the os uteri, and the external part of the cervix uteri, become affected with the same morbid alteration of structure, till at length the whole is involved in the disease.

The growth is in some cases slow, but in others rapid, so that in the course of nine months, it will sometimes entirely fill up the cavity of the pelvis, and block up the entrance of the vagina.

As the bulk of the tumour increases, the granulated structure becomes more evident, and is found to resemble very much the structure of the cauliflower when it begins to run to seed. In most cases it is of a brittle consistence, so that small parts of it will come away, if it be touched too rudely; and such pieces appear to be very white. Sometimes, though no violence has been used, small portions of a white substance come away with the urine of the patient, and in the discharge from the vagina.

When the tumour has arrived at a size greater than that of the os uteri, it spreads very much, and as the base is the smallest part of the tumour, persons not conversant with the disease, have often mistaken it for polypus. A little attention, however, to the feel of the tumour, and the breadth of its base, will be sufficient to distinguish them.

In the very early state of the cauliflower excrescence, a discharge from the vagina takes place like fluor albus; it very soon becomes thin and watery, and is sometimes tinged with blood. In most cases upon coming away, it is apparently as thin and transparent as pure water; but the linen on which it is received, when dry becomes stiff, as if it had been starched. The quantity of the discharge when the excrescence is large, will sometimes be sufficient to wet thoroughly ten or twelve napkins in a day. Now and then a discharge of pure blood appears. When this ceases, the dis-

charge of thin transparent fluid re-appears. An offensive odour generally accompanies the discharge, which is greatest when there has lately been an evacuation of pure blood, or of the catamenia. Mucus has sometimes been found in the fluid discharged, but puss never.

Patients labouring under this disorder, are variously affected with regard to pain. In the commencement none is felt; but during its progress pain is in some cases experienced. Generally in the advanced stage, the patient feels pain in the back, and in the direction of the round ligaments of the uterus. The pain is not described to be lancinating, as in cancer, and is without any sensible aggravation by paroxysms; but on the whole, it is most felt after the patient has been in a perpendicular attitude.

The disease attacks indiscriminately women of all ages. The patient is destroyed by the debility occasioned by the profuse discharge; and in the course of the disease, she always becomes extremely emaciated from the above cause. It always terminates fatally. Respecting the treatment of this disease, nothing satisfactory can be offered. All stimulating substances either in diet or medicine, seem to aggravate it, by increasing the discharge; and no astringents internally given appear to lessen it. The only means from which any benefit has been derived, is the injecting into the vagina three times a day, a strong decoction of cortex granati, or of cortex quercus, in which alum is dissolved in the proportion of eight or ten grains to every ounce of it. This has the double effect of lessening the quantity of the discharge, and rendering it less offensive. The use of anodynes must be resorted to for the mitigation of pain, and the occasional symptoms of suppression of urine, and costiveness, are to be relieved by the use of a catheter and mild laxatives.(*s*)]

(*s*) Vide a paper on the Cauliflower excrescence from the os uteri, &c. by John Clarke, M. D. Transact. of a society for the improvement of Medical and Chirurgical knowledge, 1812. And new Medical and Physical Journal, July 1812.

§ 31. CALCULI.

Earthy concretions are sometimes formed in the cavity of the uterus, and produce the usual symptoms of uterine irritation; and Vigarous considers them as very apt to excite hysterical affections. As in the bladder of urine, the constant presence of a calculus tends to thicken its coats, so the irritation of a stone in the uterus can excite a disease of the substance of the womb, and produce ulceration, which may extend to the rectum. The disease in question is very rare, and can only be discovered by feeling the concretion with the finger, or a probe introduced within the os uteri, which is sufficiently open to permit of this examination. Nature, it would appear, tends to expel the substance;* and we ought to co-operate, if necessary, with this tendency. We must also relieve suppression of urine,† or any other urgent symptom which may be present.

§ 31. POLYPI.

Polypous tumours are not uncommon, and may take place at any age; they are not, however, often met with in very young women. They always affect the health, producing want of appetite, dyspeptic symptoms, uneasiness in the uterine region, a variable swelling of the abdomen, aching pain in the back, bearing-down pains, tenesmus, and a dragging sensation at the groins. When these symptoms have continued some time, the strength is impaired, and the pulse becomes more frequent. At first, there is generally a mucous discharge; but at length blood is discharged, owing to the rupture of some of the veins of the tumour, or sometimes from the uterine vessels themselves, and the permanent discharge not unfrequently becomes fœtid. Mr. Clark, in his late work, very properly notices, that the blood often coagulates over

* Gaubius relates a case, where it was complicated with prolapsus uteri. After a length of time, severe pains came on, and in an hour a large stone was expelled; next day a larger stone presented, but could not be brought away until the os uteri was dilated. From time to time after this, small stones were expelled; but at last she got completely well.

† This proved fatal in a child of five years old.

the polypus, and comes off like a ring. These symptoms, however, cannot point out to a certainty, the existence of a polypus; we must have recourse to examination, by which we discover that the uterus is enlarged, its mouth open, and a firm, but generally moveable body within it. If the os uteri have not yet opened, so as to admit the finger, the diagnosis must be incomplete.

By degrees the polypus descends from the uterus, or painful efforts are made more quickly to expel the tumour, the body of which passes into the vagina,* and sometimes occasions retention of urine.† The pedicle remains in utero, and the bad consequences formerly produced, still continue, except in a few cases, where the tumour has dropped off,‡ and the patient got well. In such cases it has been supposed that the os uteri acted as a ligature; and to the same cause is attributed the bursting of the veins, which produce, in many instances, copious hemorrhage. But, although hemorrhage be most frequent after the polypus has descended, yet it may take place whilst it remains entirely in utero.

It sometimes happens that the uterus becomes partially inverted,§ before or after the polypus is expelled into the vagina; and this circumstance does not seem to depend altogether on the size

* In a case which occurred to the late Mr. Hamilton of this place, the polypus was expelled by labour pains, but the woman died exhausted.—In a case related by Vater, it was expelled when the woman was at stool. Haller, Disp. Chir. Tom. III. p. 621. See also a case in the same work, p. 611. by Schunkius.—In the patient of Vacoussain, the polypus was expelled after severe pain; its pedicle was felt to pulsate very strongly, but a ligature being applied, the tumour was cut off. Instantly the ligature disappeared, being drawn up within the pelvis, but on the third day it dropped off. Mem. de l'Acad. de Chir. Tom. III. p. 533.

† Vide case by Vater, in Haller, Disput. Chir. Tom. III. p. 621.—In the case furnished by M. Espagnet, an attempt was made to introduce the catheter; but a straight one being employed instead of a curved one, or an elastic catheter, it was found necessary previously to make an incision in the fore part of the polypus, which had protruded. Mem. de l'Acad. de Chir. Tom. III. p. 531.

‡ Mem. de l'Acad. de Chir. Tom. III. p. 532.

§ Vide case by Goulard, in Hist. de l'Acad. des Sciences, 1732, p. 42.—Dr. Denman, in his engravings, gives two plates of inversion, one from Dr. Hunter's Museum, the other from Mr. Hamilton.

of the polypus, or its weight. Polypus may also be accompanied with prolapsus uteri.*

Polypi may be attached to any part of the womb, to its fundus, cervix, or mouth; and it has been observed, that there is less tendency to hemorrhage, when they are attached to the cervix, than either higher up, or to the os uteri itself. If there be a union betwixt the os uteri and the tumour,† or if they be in intimate contact, polypus may pass for inversio uteri; but the history of the case, and attentive examination, will point out the difference, which will be noticed when I come to consider inversion and prolapsus of the uterus. Here I may only remark, that the womb is sensible, but the polypus is insensible, to the touch, or to irritation; but it should be recollected, that if the polypus be moved, sensation can be produced by the effect on the womb.

Polypi are of different kinds. The most frequent kind is of a firm, semi-cartilaginous structure, covered with a production of the inner membrane of the womb; and indeed it seems to proceed chiefly from a morbid change of that membrane, and a slow subsequent enlargement of the diseased portion: for the substance of the uterus itself is not necessarily affected. The enlargement is generally greatest at the farthest extremity of the tumour, and least near the womb; so that there is a kind of pedicle formed, which sometimes contains pretty large blood vessels, and the tumour is pyriform. But if the membrane of the uterus be affected to a considerable extent, and especially if the substance of the uterus be diseased, then the base, or the attachment of the polypus, is broad.

The vessels are considerable, especially the veins, which sometimes burst. In every instance, I believe, if the patient live long, the tumour is disposed to ulcerate. The ulcer is either superficial and watery, or it is hollowed out, glossy, and has hard margins, or it is fungous. The two last varieties are most frequent.

Some polypi are soft and lymphatic, but these are rare in the uterus. Some are firm without, but contain gelatinous fluid, or sub-

* Med. Comment. Vol. IV. p. 228.

† Mem. of Med. Society in London, Vol. V. p. 12.

stance like axunge within. Some are solid, others cellular, with considerable cavities.

Polypi are hurtful at first, by the irritation they give the uterus, and by sympathetic derangement of the abdominal viscera. In a more advanced stage, they are attended with debilitating and fatal hemorrhage, and often with febrile symptoms, especially if the discharge be offensive, or the surface ulcerated. Notwithstanding the existence of polypus, however, it is possible for a woman to conceive.*

Various means have been proposed for the removal of polypi, such as excision, caustic, or tearing them away; but all of these are dangerous and uncertain; and therefore the only method now practised, is to pass a ligature round the base or footstalk of the polypus, and tighten it so firmly as to kill the part. The ligature consists of a firm silk cord, or a well twisted hemp string, properly rubbed with wax, or covered with a varnish of elastic gum. This is better than a silver wire, which is apt to twist or form little spiral turns, which impede the operation, and may cut the tumour. It is difficult to pass the ligature properly, if the polypus be altogether in utero; and it ought not even to be attempted, if the os uteri be not fully dilated. On this account, if the symptoms be not extremely urgent, it is proper to delay until the polypus have wholly, or in part, descended into the vagina; and when this has taken place, no good, but much evil may result from procrastination. It has even been proposed to accelerate the descent of the polypus, and produce an inversion of the uterus.†

A double canula has been long employed for the purpose of passing the ligature, one end of which was brought through each tube; and the middle portion, forming a loop, was carried over the tumour, either with the fingers, or the assistance of a silver probe with a small fork at the extremity. By practice and dexterity, this instrument may doubtless be adequate to the object in view; but without these requisites, the operator will be foiled, the

* In M. Guiot's case, the polypus was expelled.—M. Levret adds other cases, Mem. de l'Acad. de Chir. Tom. III. p. 543.

† M. Baudelocque observes, "Nous regardions ce renversement necessaire pour obtenir la guerison de la malade." Recueil Period. Tome IV. p. 137.

ligature twisting or going past the tumour, every attempt giving much uneasiness to the patient, and not unfrequently, after many trials and much irritation, the patient is left exhausted with fatigue, vexation, and loss of blood. This is very apt to happen, if the polypus be so large as to fill the vagina. The process may be facilitated by employing a double canula, but the tubes made to separate and unite at pleasure,* by means of a connecting base, or third piece, which can be adapted to them like a sheath. The ligature is passed through the tubes, which are to be placed close together, and no loop is to be left at the middle. They are then to be carried up along the tumour, generally betwixt it and the pubis. Being slid up along the finger to the neck of the polypus, one of them is to be firmly retained in its situation by an assistant, and the other carried completely round the tumour, and brought again to meet its fellow. The two tubes are then to be united by means of the common base. The ligature is thus made to encircle the polypus, and, if necessary, it may afterwards be raised higher up with the finger alone, or with the assistance of a forked probe.

When the ligature is placed in its proper situation, it is to be gradually and cautiously tightened, lest any part of the uterus which may be inverted be included. If so, the patient complains of pain, and sometimes vomits, and if these symptoms were neglected, and the ligature kept tight, pain and tension of the hypogastrium, fever and convulsions would take place, and in all probability the woman would die.† In some instances, however, the womb has been included without a fatal effect.‡

* An instrument of this kind is proposed by M. Cullerier, and is described by M. Lefaucheux in his Dissert. sur les Tumeurs Circonscrites et Indolentes du tissu cellulaire de la matrice et du vagin.

† Dr. Denham, Vol. I. p. 94. mentions a young lady who had suffered long from uterine hemorrhage. A polypus was found just to have cleared the os uteri; a ligature was applied, but as she felt severe pain, and vomited, it was slackened. Every attempt to renew the ligature had the same effect. In six weeks she died, and it was found that the uterus was inverted.

‡ M. Herbiniaux, Tom. II. obs. 17. relates a case. The ligature seemed to act on an inverted portion of the womb, producing pain, fever, and convulsions; it was slackened, but afterwards, notwithstanding a renewal of dreadful suffering, it was, with a perseverance hardly to be commended, employed so as at last to

Even when the uterus is not included, fever may succeed the operation, and be accompanied with slight pain in the belly; but the symptoms are mild, and no pain is felt when the ligature is first applied.

If the first tightening of the ligature, by way of trial, give no pain, it is to be drawn firmly, so as to compress the neck of the tumour sufficiently to stop the circulation. It is then to be secured at the extremity of the canula; and as the part will become less in some time, or may not have been very tightly acted on at first, the ligature is to be daily drawn tighter, and in a few days will make its way through. After the polypus is tied, it is felt to be more turgid, and harder; and, if visible, it is found of a livid colour, and presently exhales a fœtid smell. These are favourable signs. The diet is to be light, and all irritation avoided during the cure. The bowels and bladder must be attended to, and, if there be sympathetic irritation of the stomach, soda water is useful, with small doses of laudanum.*(u)*

§ 33. MALIGNANT POLYPI.

There are other tumours still more dangerous,* as they end in incurable ulceration, and are so connected with the womb, that the whole of the diseased substance cannot be removed. These always adhere by a very broad base,† and cannot be moved freely,

remove the polypus.—Desault found, after having applied a ligature round a polypus, and cut the tumour off next day, that part of the fundus uteri was attached to the amputated substance; the patient did well. Baudelocque supposes that some cases, related as examples of amputation of inverted uteri, were merely polypi, accompanied with inversion. Recueil Period. Tom. IV. p. 115.

(*u*) The reader is referred to the following interesting paper on the subject of the preceding article, viz: "Memoir sur l'organization des polypes uterus, &c. par P. J. Roux, Tom. III. des œuvres chirurgicales de P. J. Desault, par Xav. Bichat, p. 370.

* Vide Mem. de l'Acad. de Chir. Tome III. p. 538.—Herbiniaux Observations, Tome I. ob. 39.—Baillie's Morbid Anatomy, chap. xix.—Vigarous, Malad. des Femmes, Tome I. p. 425.

† Dr. Denman, Vol. I. p. 95. relates a case of polypus with broad stem, which was supposed to be a cancer of the uterus. The ligature was applied, and in

or turned round like the mild polypus. They are sometimes pretty firm, but generally they are soft and fungous, or may resemble cords of clotted blood. When dissected, they are found to be very spongy, with cells or cavities of various sizes; sometimes they are laminated. These, which have been called vivaces by M. Levret, are always the consequence of a diseased state of the womb; but they are not always, as that author supposes, vegetations from an ulcerated surface. They do, however, very frequently spring from that source, being generally of the spongoid nature. Occasionally they have been mistaken for a piece of a retained placenta, and portions of fœtid fungi have been torn away, in attempts to extract the supposed placenta, or ovum.

The hypogastric region is tumid, and painful to the touch, even more so than the tumour itself, which, felt per vaginam, is less sensible than the womb. Sometimes little pain is felt in this disease, except when the womb is pressed. The tumour often bleeds, discharges a sanious matter, and may shoot into the vagina: but in this it differs from polypus, that it comes into the vagina generally by growth, and not by expulsion from the womb, which does not decrease or become empty as the vagina fills. The treatment must be palliative, for extirpation does not succeed, the growth being rapidly renewed. Opiates and cleanliness are most useful.

§ 34. MOLES.

Moles* are fleshy or bloody substances contained within the cavity of the uterus. They acquire different degrees of magni-

eight or nine days it came away; but when the polypus was removed, another substance nearly of the same size, was found to have grown into the vagina. The woman died in a month. I have seen the common polypus combined with an indurated thickening of the uterus, and fungous or flocculent state of the cavity. In one case of this kind, the uterus and rectum freely communicated by ulceration. See also some cases in Trans. of a Society, &c. Vol. III.

* Sandifort Obs. Path. Anat. lib. II. p. 78.—Schmid. de Concrement. Uteri, in Haller's Disp. Med. Tomus IV. p. 746.

tude, and are found of various density and structure.* They may form in women who have not born children,† or they may succeed a natural delivery,‡ or follow an abortion, or take place in a diseased state of the uterus.§ It is the opinion of many, that these substances are never formed in the virgin state, and no case that I have yet met with contradicts the supposition. The symptoms produced by moles are at first very much the same with those of pregnancy, such as nausea, fastidious appetite, enlargement of the breasts, &c.; but the belly enlarges much faster, is softer, and more variable in size than in pregnancy, being sometimes as large in the secoud month of the supposed, as it is in the fifth of the true pregnancy. Pressure occasionally gives pain. Petit observes, that the tumour seems to fall down when the woman stands erect, but this is not always the case. It must be confessed, that the symptoms are at first, in most cases, ambiguous, nor can we for some time arrive at certainty. In general, the mass is expelled within three months, or before the usual time of quickening in pregnancy; and more or less hemorrhage accompanies the process, which is very similar to that of abortion, and requires the same management.‖ Sometimes the expulsion may be advantageously hastened, by extracting the substance with the finger; but we must be careful not to lacerate it, and leave part behind. If the mole be retained beyond the usual time of quickening, we find that the belly does not increase in the same proportion as formerly, and the womb does not acquire the magnitude it possesses in a pregnancy of so many months standing. There is also no motion perceived. Many of the symptoms of mole may pro-

* Sometimes the mass appears to be putrid, and is expelled with great hemorrhage. Vide case by Dr. Blackbourn, Lond. Med. Journal, Vol. II. p. 122.—Sometimes it has a kind of osseous covering, as in the case by Hankoph, in Haller. Disp. Med. IV. p. 715.

† La Motte, chap. vii. This chapter contains several useful cases, one of which proved fatal from hemorrhage.

‡ Hoffman. Opera, Tomus III. p. 182.—Stahl. Coleg. Casuale, cap. lxxvi. p. 797.

§ With scirrhus of the uterus, Haller's Disp. Med. IV. p. 751 et 753.

‖ Puzos advises blood-letting, Traite, p. 211.—Vigarous recommends emetics and purgatives, to favour the expulsion, Tome I. p. 115.

ceed from polypus; but in that case, the breasts are flaccid and the symptoms indicating pregnancy are much more obscure. The os uteri is not necessarily closed in a case of polypus; whereas in that of a mole, if there have been no expulsive pains, it is generally shut.

When a woman is subject to the repeated formation of moles, I know of no other preventive, than such means as improve and invigorate the constitution in general, and the uterus in consequence thereof. This is of no small importance, as a weak state of the uterine system predisposes to more formidable diseases, and may be followed by scirrhus of the womb or of the breast.*

§ 35. HYDATIDS.

Hydatids may also enlarge the womb, and these frequently are formed in consequence of the destruction of the ovum at an early period,† or of the retention of some part of the placenta, after de-

* In the Hist. of Acad. of Sciences for 1714, is the case of a woman who received a fall in the third month of pregnancy. The belly however increased in size till the fifth, when it began to lessen. In the sixth she was delivered of a bag, as large as the fist, with a placenta and fœtus of the size of a kidney-bean. In this case, hydatids were not formed; but in the History for 1715, is a case, where the woman, falling in the second month, had the ovum converted into hydatids, which were expelled in the tenth month. As hydatids often succeed to genuine pregnancy; the symptoms may at first be exactly the same with those of pregnancy, nay, even motion may be felt, but afterwards the child may die, and hydatids form.—Mr. Watson in the Phil. Trans. Vol. XLI. p. 711. gives a case, where there was, for a long time before the expulsion of hydatids, a quantity of blood discharged every night; pains at last came on, and expelled many hydatids. In this case, the symptoms of pregnancy were evident from Nov. to Feb. When the ovum is blighted, the belly ceases to enlarge in the due proportion, and the breasts become flaccid.

† Dr. Denman gives an engraving of a diseased ovum: and Mr. Home relates a case, where the patient, after being attacked with flooding, and vomiting, and spasm in the abdomen, died. On opening her, the womb was found filled with hydatids, and its mouth a little dilated. Trans. of a Society, &c. Vol. II. p. 300.—Such cases as I have seen have been attended with considerable discharge; but as a great part of it was watery, it made a greater appearance than the real quantity of blood would have caused.

In a case related by Valleriola, p. 91, the woman had at first her usual symptom of pregnancy, but in the eighth month expelled hydatids.—Pichart in Zod.

livery or abortion. We possess no certain diagnostic; when they are formed in consequence of coagula, or part of the placenta remaining in utero, the symptoms must be such as proceed from the bulk of the womb, or from its irritation, as if by a polypus or mole. The remarks in the preceding section are therefore applicable here; but in a great majority of cases, hydatids are formed in consequence of the destruction of an ovum; and accordingly, the symptoms at first are exactly the same with those of pregnancy. These cease when the ovum is blighted, and the time when this happens is marked by the breasts becoming flaccid, and the sickness and the sympathetic effects of pregnancy going off. The conception remains, and the belly either continues nearly of the same size, or if it increase, it is very slowly. Menstruation does not take place; but there may occasionally be discharges of blood in different degrees, and there always is at one period or other, a very troublesome discharge of water, so that cloths are required,

Med. Gall. an. 3, p. 73, relates a similar case, but the hydatids were expelled in the fourth month without hemorrhage. Other cases of hydatids are to be found in Tulpius, lib. III. c. 32. Schenkius, p. 685. Mercatus de Mulier. affect. lib. III. c. 8. Christ. a Veiga Art. Med. lib. III. § 10. c. 13. relates an instance of 60 hydatids, as large as chesnuts, being expelled.

Stalpart Vander Wiel, Tom. I. p. 301. mentions a woman who, in the ninth month, after enduring pains for three days, expelled many hydatids, and the process was followed by lochia. Lossius, Obs. Med. lib. IV. ob. 16. mentions a widow who for several years had a tumid belly: after death, hydatids were found in utero. See also Mauriceau's Observations, obs. 367. Ruysch, Obs. Anat. Chir. p. 25. Albinus Anat. Acad. lib. I. p. 69. and tab. III. fig. 1. describes in an abortion, the commencement of this change. The vesicles are not larger than the heads of pins. Wrisberg describes a more advanced stage in Nov. comment. Gotting. Tom. IV. p. 73; and Sandifort, in his Obs. Anat. Path. lib. II. c. 3. tab. VI. fig. 5. has a case extremely distinct. See also Haller Opusc. Path. ob. 48.

Vigarous, Malad, &c. Tom. I. p. 385, proposes mercury to kill the hydatids. He knew an instance where the woman discharged hydatids always when she went *a la garde-robe*. Mr. Mills relates a case, where the woman betwixt the second and third month, had symptoms of abortion, and afterwards, in the fifth or sixth, expelled above three pints of hydatids. Vide Med. and Phys. Journal, Vol. II. p. 447.

When the mass is expelled, it is found either to consist entirely of small vesicles, or partly of vesicles, and partly of more solid remains of the ovum, or coagulum of blood.

and even with these, the patient is uncomfortable. No motion is perceived by the woman, and the size of the belly and state of the womb do not correspond to the supposed period of pregnancy. In some instances, the health does not suffer; in others feverishness and irritation are produced. After an uncertain lapse of time, pains come on, and the mass is discharged, often with very considerable hemorrhage. This expelling process may sometimes be advantageously assisted by introducing the hand to remove the hydatids, or to excite the contraction of the womb; but this must be done cautiously, and only when hemorrhage or some other urgent symptoms occur. These must be treated on general principles.

In some cases, milk is secreted after the hydatids are expelled. In others, a smart fever, with pain in the hypogastrium, follows. It requires laxatives and fomentations. When hydatids form in a blighted ovum, their number varies greatly in different cases. In some, I have seen only a little bit containing vesicles, often only the under part which had been for some time detached in a threatened abortion. In others, almost the whole is changed, and the mass much enlarged. This, I presume, is connected with the womb, by the unchanged portions alone; and therefore, in examining the inner surface of such a uterus after the mass was expelled, we should expect to find it more or less similar to the gravid state, according to the greater or less change in the ovum. The relative magnitude of the vessels in the two states has not been ascertained, few opportunities being afforded of dissection in this disease.*(x)*

(x) Ruysch in the first volume of his valuable works, has given two very curious and accurate plates of these hydatids of the placenta or uterus. There is also a representation of these vesicles in Baillie's plates of Morbid Anatomy, executed with great truth and elegance. It is now generally considered by naturalists, that the hydatids found in the human body, are a sort of imperfect animals; and as Dr. Baillie has observed, although there may be some difference between them in simplicity of organization, this need be no considerable objection to the opinion, as life may be conceived to be attached to the most simple form of organization.

For further information on the subject of hydatids, particularly those of the uterus, the student is referred to a paper by the editor, inserted in the Eclectic Repertory, Vol. I. p. 499, and seq. Also to Monro's Morbid Anatomy of the human gullet, stomach and intestines. Edin. 1811, p. 255.

Sometimes there is only one large hydatid, or, at most, a very few in the womb, and the preceding remarks will also be applicable, in a great measure, to this case. In the advanced stage, we find the belly swelled, as in pregnancy; but the breasts, although sometimes tense, are oftener flaccid, and no child can be discovered in utero, nor does the woman perceive any motion. There may be pain in the abdomen, and obscure fluctuation is discernible externally, whilst per vaginam it is more distinct. The neck of the womb is small, and the case much resembles ovarian dropsy, except that the tumour occupies the region of the uterus. The duration of this complaint is uncertain; but the water is at last discharged suddenly, and after making some exertion. The bag afterwards comes away, and the process is not attended with much pain.* It is most prudent to be patient; but if the symptoms be troublesome, the fluid can be drawn off by the os uteri. This disease, a solitary hydatid, is oftener combined with pregnancy, or with a mole, than met with alone. The first combination† is not uncommon, and I have seen the hydatid expelled some weeks before labour. Hildanus gives an instance of the second, where the ovum was converted into a mole intimately connected to the uterus, and complicated with a collection of fluid to the extent of six pounds. In this case, so much irritation was given, as to exhaust the strength, and produce local inflammation.

§ 36. AQUEOUS SECRETION.

A different disease from that described in the last section, is an increased secretion from the uterus itself, accompanied generally with symptoms of uterine irritation; and if the woman menstruate,

* Hildanus, I think, relates the history of a woman who was supposed to be pregnant, but *dum noctu cum marito rem haberet*, a sudden inundation swept away her hopes.

† Hildanus relates a case of this kind in his own wife, *dulcissima et charissima conjux mea*. Hydatids may also be combined with pregnancy. The same author tells us of a woman who, in the fifth month, was delivered of a mola aquosa, or vesicles containing ten pounds of water; she did not miscarry, but went to the full time.

the menses are pale and watery. There may be a constant stillicidium of water,* or from some obstructing cause the fluid may be for a time retained,† and repeatedly discharged in gushes; I do not know to a certainty, that this can take place without some organic affection of the womb, or some substance within its cavity. At the same time, I have met with this where no hydatids were discharged, where the womb felt sound, and a cure was at last accomplished. We must always examine carefully, for it may proceed from hydatids, or from disease, or excrescences about the os uteri. If nothing can be discovered, we must proceed upon the general principle of improving the health, and injecting mild astringents. I need scarcely caution the practitioner not to confound a discharge of urine from an injury of the bladder, with this complaint.‡

§ 37. WORMS.

Worms§ have been found in the uterus, producing considerable irritation; and generally, in this case, there is a fœtid discharge. We can know this disease only by seeing the worms come away. It is cured by injecting strong bitter infusions.

* Hoffman mentions a woman who had a constant stillicidium, a pint being discharged daily. It at last proved fatal. Opera, Tom. III. p. 160.

† Kirkringius, p. 28. considers dropsy of the uterus as impossible, and says, that every case of collection of water depends on a large hydatid. Dr. Denman seems to be much of the same opinion. But we find instances where water is accumulated and repeatedly discharged, apparently from the removal of a temporary obstruction. Fernelius relates a case, where the woman always before menstruation discharged much water. Path. lib. VI. c. 15. And M. Geoffroy describes a case of repeated discharge. Vide Fourcroy la Med. Eclarée, Tom. II. p. 287 A case is related by Turner, where the external membrane of the uterus was said to be distended with water. The menses were suppressed, and a secretion of whitish fluid took place from the breasts. Phil. Trans. No. 207.

‡ Vesalius, Tom. I. p. 438, says, that he found a uterus containing 180 pints of fluid, and its sides in many places scirrhous. I wish he may not have mistaken the ovarium for the womb.

§ Vigarous, Malad. Tome I. p. 412.—Mr. Cockson mentions a case, where maggots were discharged before the menstrual fluid. The woman was cured, by injecting oil, and infusion of camomile flowers. Med. Comment. Vol. III. p. 86.

§ 38. TYMPANITES.

Sometimes* air is secreted by the uterine vessels, and comes away involuntarily, but not always quietly. Tonics, and astringent injections, occasionally do good; and, as this disease rarely causes sterility, it is sometimes cured permanently by pregnancy. It is said, that the air is in certain cases, retained, and the uterus distended with it, producing a tympanitis of the uterus.

§ 39. PROLAPSUS UTERI.

The prolapsus, or descent of the uterus, takes place in various degrees.† The slightest degree, or first stage, has been called a relaxation; a greater degree, a prolapsus; and the protrusion from the external parts, a procidentia. It is necessary to attend carefully to this disease, to ascertain its existence, as it may, if neglected, occasion bad health, and many uneasy sensations. The symptoms at first, if it do not succeed parturition, are ambiguous, as some of them may proceed from other causes. They are principally pain in the back, groins, and about the pubis, increased by walking, and accompanied with a sensation of bearing down. There is a leucorrheal discharge, and sometimes the menses are increased in quantity. In a more advanced state, there is strangury, or the urine is obstructed, and the patient feels a tumour or fulness toward the orifice of the vagina, with a sensation as if her bowels were falling out, which obliges her instantly to sit down, or to cross her legs, as if to prevent the protrusion. This is accompanied with a feeling of weakness. There are also, during the whole course of the complaint, but especially after it has continued for some time, added many symptoms, proceeding from deranged action of the stomach, and bowels, together with a variety of those called nervous. On this account, an inattentive practitioner may

* Vide Vigarous' Maladies, Tome I. p. 401.

† Vide Memoir by Sabatier, in 3d. vol. of the Memoirs of the Academy of Surgery.

obstinately consider the case as altogether hysterical, until emaciation and great debility are induced.

But if the woman have been recently delivered, there is less likelihood of the practitioner being misled. She feels a weight and uneasiness at the pubis and hypogastric region, with an irritation about the urethra and bladder; and sometimes a tenderness in the course of the urethra, or near the vulva. A dull dragging pain is felt at the groins, and when she stands or walks, she says she feels exactly as she did before the child was born, or as if there was something full and pressing. Pains are felt in the thighs, and the back is generally either hot, or aches. These symptoms go off in a great measure, when she lies down, though, in some cases, they are at first so troublesome, as to prevent rest. In some instances, no pain is felt in the back; but whenever the patient stands, she complains of a painful bearing-down sensation, or sometimes of pressure about the urethra, or orifice of the vagina.

By examination, the uterus is felt to be lower down than usual, and the vagina always relaxed. In certain circumstances, it prolapses, forming a circular protrusion at the vulva. Next, the os uteri descends so low as to project out of the vagina. In the greatest degree, or procidentia, the uterus is forced altogether out, inverting completely the vagina, and forming a large tumour betwixt the thighs. The intestines descend* lower into the pelvis, and even may form part of the tumour, being lodged in the inverted vagina, giving it an elastic feel. In some instances, this unnatural situation of the bowels gives rise to inflammation. The uterus is partially retroverted, for the fundus projects immediately under the perineum, and the os uteri is directed to the anterior part of the tumour. The orifice of the urethra is sometimes hid by the tumour, and the direction of the canal is changed; for the bladder,

* Sometimes the situation of the abdominal viscera is very much altered. In Mr. White's case, the liver was found to descend to the lower part of the belly, and the diaphragm was lengthened so as to allow the stomach to reach the umbilical region. Vide Med. Obs. and Inq. Vol. III p. 1. In a complicated case, related by Schlincker, the pylorus hung down to the pubis. Haller, Disp. Med. IV. 419.

if it be not scirrhous, or distended with a calculus of large size, is carried down into the protruded parts;* and a catheter passed into it, must be directed downwards and backwards. The procidentia is attended with the usual symptoms of prolapsus uteri, and also with difficulty in voiding the urine, tenesmus, and pain in the tumour. If it have been long or frequently down, the skin of the vagina becomes hard, like the common integuments, and it very rapidly ceases to secrete. The mouth and neck of the womb also, in such cases, elongate. Sometimes the tumour inflames, indurates, and then ulceration or sloughing takes place. This procidentia may occur in consequence of neglecting the first stage, and the uterus is propelled with bearing-down pains; or it may take place all at once, in consequence of exertion, or of getting up too soon after delivery. It may also occur during pregnancy, and even during parturition. Sometimes it is complicated with stone in the bladder,† or with polypus in the uterus.‡

Some have, from theory, denied the existence of prolapsus,§ and others have disputed whether the ligaments were torn or re-

* This point is very well considered by Verdier, in his paper on Hernia of the Urinary Bladder, in the first Vol. of Mem. de l'Acad. de Chir. See also a paper by M. Tenon, in Mem. de l'Institute, Tom. VI. p. 614.—Mr. Paget relates a very interesting case of prolapsus uteri, in which the bladder became retroverted, lying above the uterus. It could not descend before it, or along with it, being filled with a calculus, weighing 27 ounces, and others of a smaller size. Some parts of the bladder were an inch thick; a catheter could not be introduced. Med. and Phys. Journal, Vol. VI. p. 391.

† Ruysch, feeling some hard bodies in the tumour formed by the protruded parts, cut out 42 calculi from the bladder. M. Tolet extracted fifty, and afterwards cured the woman with a pessary. Duverney met with large calculus in the bladder, with procidentia uteri; and Mr. Whyte relates a similar fact. Med. Obs. and Inq. Vol. III. p. 1. See also Deschamps Traité de la Taille, Tom. IV. p. 158.

‡ Vide the case of a girl aged 21 years, related by Mr. Fynney. The polypous excrescence was extirpated from the os uteri, and then a pessary was employed. Med. Comment. Vol. IV. p. 228.

§ Kirkringius says, *Nemo vidit nemo sensit decepti omnes imagine falsa, alios decipiunt; laxitas quædam colli quæ extra pudendum prominet hæc nobis fecit ludibrio.* Opera, p. 48. Vide also Job a Meckren, Observ. Chir. c. 51. Barbette Chirurg. c. 8. Roonhuysen, Obs. Chir. part I. ob. 2.

laxed. There can be little doubt, that when it occurs speedily after delivery, it is owing to the weight of the womb, and the relaxed state of the ligaments and vagina. From these causes, getting up too soon into an erect posture, or walking, may occasion prolapsus, particularly in those who are weak or phthisical. When it occurs gradually in the unimpregnated state, it is rather owing to a relaxation of the vagina, and parts in the pelvis, than elongation of the round ligaments. By experiments made on the dead subject, we find, that more resistance is afforded to the protrusion, by the connection of the uterus and vagina to the neighbouring parts, than by the agency of the ligaments; for although the ligaments be cut, we cannot, without much force, make the uterus protrude. Frequent parturition, fluor albus, dancing during menstruation, and whatever tends to weaken or relax the parts, may occasion prolapsus. Sometimes a fall brings it on. No age is exempt from it.* When symptoms indicating prolapsus uteri manifest themselves, we ought to examine the state of the womb, the patient having lately been, or rather being, in an erect posture. The symptoms sometimes at first turn the attention rather to the bladder or pubis, than the womb; but a practitioner of experience will think it incumbent on him to ascertain the real situation of that viscus. If we find that there is a slight degree of uterine descent, we must immediately use means to remove the relaxation. These consist in the frequent injection of solution of sulphate of alumin, either in water, or decoction of oak bark, repeated ablution with cold water, tonics, and the use of the cold bath, at the same time that the bowels are kept regular, all exertion avoided, and a recumbent posture much observed. If these things fail, or if the disease exist to a considerable degree, then, besides persisting in them, we must have recourse to the assistance of mechanical means. These consist of supporting substances called pessaries, which are placed in the vagina, and resting on the perineum, keep up the womb. They

* Dr. Monro mentions a procidentia uteri, in a very young girl. It was preceded by bloody discharge. Works, p. 535. Another case is related by Saviard, Obs. 15. in which the prolapsed uterus was mistaken for the male penis; and as Goldsmith's soldier believed they would allow him to be born in no parish, so this girl was in danger of being determined to have no sex.

always give immediate relief; but where the relaxation is considerable, they only mitigate, but do not entirely remove the sensation, which must continue more or less, as long as the relaxation remains. It must also be remembered, that they generally excite a mucous discharge from the vagina; on which account, as well as from the dislike many patients have to them, they are seldom employed in the commencement of the complaint, or till other means have failed. In recent cases, or where the relaxation is not great, a perseverance in the use of the pessary, topical astringents, and general tonics, may accomplish a cure. Fatigue or exertion must always be avoided. The liberal use of tincture of kino internally, has been advised, to act as an astringent on the vagina and muscles, at the outlet of the pelvis; but topical applications are more effectual. Osiander advises the insertion of a bag of fine linen, filled with powdered oak bark, at the same time that the patient is confined for three weeks to bed. Much relief is obtained by the use of the spring-support, immediately to be spoken of.

Pessaries are made of wood, and are of different shapes, some oval, some flat and circular, some like spindles, or the figure of eight, others globular. Of all these, the globular(*y*) pessary is the best, and it ought to be of such size as to require a little force to introduce it into the vagina; that is to say, it must be so large as not to fall through the orifice, when the woman moves or walks. Whichever be employed, it ought to be taken out frequently, and cleaned.* By diminishing gradually the size of the pessary, and

(*y*) The oval form is nevertheless preferred by many, and apparently not without reason.

* Morand relates the case of a woman who had fœtid discharge from the vagina, accompanied with pain. On examination, fungous excrescences were discovered in the vagina, and amongst these a hard substance, which being extracted was found to be part of a silver pessary. The vagina contracted at this spot, and thus, though in a disagreeable way, prevented a return of the prolapsus. Pessaries have also ulcerated through to the rectum; and Mr. Blair mentions a woman in the Locke Hospital, who had introduced a quadrangular piece of wood into the vagina as a pessary, and which ulcerated through into the rectum, producing great irritation. Med. and Phys. Journal, Vol. X. p. 491. It is likewise necessary, if the pessary have an opening in it, to observe that the cervix uteri do not get into the opening, and become strangulated.

using astringents, we may perhaps be able at last to dispense with it. In all the stages, a firm broad bandage applied round the abdomen, frequently relieves the uneasy sensations about the bowels, back, and pubis. The cold bath is also useful. It is farther necessary to mention, that the symptoms and treatment of prolapsus may be modified by circumstauces which precede it, but with which it is not essentially connected. For instance, a tender or inflamed state of the uterus, and the appendages, may take place after delivery, and when convalescent, the patient may rise too soon, or sit up, striving to make the child suck, and thus bring on a degree of prolapsus. In this case, it is evident that the symptoms may be more acute or painful, and they will not be removed by a pessary, until by continued rest, laxatives, and occasional fomentations, the morbid sensibility of the parts within the pelvis be got rid of.

When the relaxation is great, it has been proposed to use a hollow elliptical pessary, so large, as that by pressing against the sides of the vagina, it may support both itself and the womb, but it generally gives pain, and the relaxed vagina turns up within it, and becomes irritated. I am therefore clearly of opinion, that the oval pessary should, though hollow, have no large aperture. The long diameter must vary from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches, according to the degree of relaxation. In such cases of relaxation, if the oval pessary do not succeed in removing the distressing sensation of the abdominal viscera being about to fall out, then, in addition to it, or the globe pessary, benefit may be derived from supporting the perineum itself, with a soft pad, with a spring on a similar principle with that used for prolapsus ani. A contrivance of this kind, or a firm T-bandage must be employed with a globe pessary, where the perineum is greatly lacerated.*(z)*

(z) In my own practice, I have generally preferred the oval pessary of elastic gum, by being applied transversely; as regards the vagina, there is less danger of impeding the evacuation of the fæces and urine, by pressure on the rectum and neck of the bladder, or urethra. Where this cannot be procured, pessaries may be made of silver, of the oval form and hollow, and with care may be found to answer. But it is probable, that the sponge pessary, under proper management, will be found to answer every intention. This kind of pessary, appears

If a procidentia be large, and have been of long duration, the reduction of the uterus may disorder the contents of the abdomen, producing both pain and sickness. In this case, we must enjoin strict rest in a horizontal posture. The belly should be fomented, and an anodyne administered. Sometimes it is necessary to take away a little blood; and we must always attend to the state of the bladder, preventing an accumulation of urine. When the symptoms have abated, a pessary must be introduced,* and the woman may rise for a little, to ascertain how it fits; but, as in other cases, she ought for some time to keep much in a horizontal posture, and avoid for a still longer period every exertion. If there have existed inflammation of the displaced bowels, during the continuance of the procidentia, serious consequences may result from the reduction, owing to the adhesions which have formed. Should there be much difficulty and pain attending the attempt to reduce, it ought not to be persisted in.

If the tumour, from having been much irritated, or long protruded, be large, hard, inflamed, and perhaps ulcerated, it will be impossible to reduce it until the swelling and inflammation be abated, by a recumbent posture, fomentations, saturnine applications, laxatives, and perhaps even blood-letting.† After some days we may attempt the reduction, and will find it useful previously to empty the bladder. The reduction, in general, causes for a time abdominal uneasiness, which sometimes increases to a great degree, accompanied with constipation, and rendering it necessary to allow the tumour again to come down. If the uterus cannot be reduced, and be much diseased, it has been proposed to extirpate the tu-

first to have been publicly recommended by Dr. Haighton, of London, and has since been approved and adopted by several practitioners of respectability. See a paper on this subject, by Mr. Dawson, in the 13th Vol. of Lond. Med. Phys. Journal.

* Dr. Denman very properly advises, that a pessary should not be introduced immediately after the uterus is reduced. Lond. Med. Journal, Vol. VII. p. 56.

† M. Hoin succeeded in reducing a very large, hard, and even ulcerated procidentia, by fomentations, rest, and low diet. Mem. de l'Acad. de Chir. Tome III. p. 365.

mour. This has been done, it is true, with success,* but it is extremely dangerous; for the bladder is apt to be tied† by the ligature, which is put round the part; and as the intestines fall down above the uterus into the sac, formed by the inverted vagina, they also are apt to be cut‡ or constricted. As a palliative, Richter advises the use of a suspensory bandage.

A prolapsus uteri does not prevent the woman from becoming pregnant;§ and it is even of advantage that she should become so, as we thus, at least for a time, generally cure the prolapsus. But we must take care, lest premature labour‖ be excited; for the uterus may not rise properly, or may again prolapse, if exertion be used.

Sometimes, especially if the person receive a fall,¶ or have a wide pelvis, the uterus may prolapse during pregnancy, although the woman have not formerly had this disease. Our first care

* See Rossuet, Plater and Platner. Inst. Chir. section 1447. Wedelius de Procid. Uteri, c. 4. Volkamer, in Miscel. Cur. an. 2. ob. 226. Another case may be seen in Journal de Med. Tom. LXVIII. p. 195. Paré Œuvres, p. 970.—Carpus extirpated it with success. Vide Longii Epist. Med. lib. II. epist. 39.—Slevogtius relates a distinct case, where the womb was found in the vagina, as if in a purse. Dissert. 12.—Benevenius says he saw a woman whose uterus sloughed off. De Mirand. Morb. Causis, cap. 12.—Dr. Elmer supposes he has met with a similar case. Med. Phys. Journal, Vol. XVIII. p. 344.—The latest case is related by Laumonier. The patient was long subject to prolapsus uteri, but at last the womb, with the vagina, was forced out so violently, that she thought all her bowels had come out. At the upper part of the tumour there was a strong pulsation. It was extirpated chiefly by ligature. The woman died some years after this, and the womb was found wanting. La Med. Eclarée, par Fourcroy, Tom. IV. p. 33. M. Baudelocque, however, says, that the uterus was only partially extirpated. Vide Recueil Period. Tom. V. p. 332.

† This happened in Ruysch's case. Obs. Anat. vii.

‡ This occurred in a case related by Henry, ab Heers, Obs. Med. p. 192.

§ Hervey relates a case, where the tumour was as large as a man's head, ulcerated, and discharged sanies. It was proposed to extirpate the prolapsed uterus, but the following night a fœtus was expelled, *spithama longitudine.* Opera, p. 558. See also a case by Mr. Antrobus, in Med. Museum, Vol. I. p. 227.

‖ Vide Mr. Hill's case, in Med. Comment. Vol. IV. p. 88.

¶ Dr. Burton had a patient, who in the fourth month of pregnancy fell, and was thereafter seized with suppression of urine. The os uteri was found almost at the orifice of the vagina. He drew off about three quarts of urine, raised up the womb, and introduced a pessary. System, p. 156.

ought to be directed to the bladder,* lest fatal suppression of urine† take place. Our next object is to replace the uterus, and retain it by rest, and a pessary. If it cannot be reduced,‡ the uterus must be supported by a bandage,§ until, by delivery, it be emptied of its contents. It is then to be reduced. The management of prolapsus during labour, will be afterwards considered.

If prolapsus be threatened, or have taken place after delivery, in consequence, for instance, of getting up too soon, we must confine the woman to a horizontal posture, till it have regained its proper size and weight; and this diminution is to be assisted by gentle laxatives, particularly the daily use of the sulphas potassæ cum sulphure, in doses of from two to three drachms. The bandage formerly noticed, is also useful and comfortable.

In some cases, the cervix uteri lengthens and descends lower in the vagina, though the body of the womb remains in situ. This is not to be confounded with prolapsus, for it is really a preternatural growth of part of the uterus; and this portion, or elongation, has been removed by ligature.

§ 40. HERNIA.

Inguinal herniæ of the uterus have been long ago described by Sennert, Hildanus, and Ruysch, and very lately by Lallement. This species of displacement may occur in the unimpregnated state, and the woman afterwards conceive; or it may take place when pregnancy is somewhat advanced. If it be possible to reduce

* Mr. Dray mentions a case, where in the fourth month of pregnancy, the woman was seized with pains, like those indicating abortion, accompanied with suppression of urine. The os uteri was very near the orifice of the vagina. This disease proving fatal, the bladder was found to be thickened, enlarged, and in part mortified. Vide Med. and Phys. Journal, Vol. III. p. 456.

† Reink mentions a woman who was pregnant of twins. In the fourth month the womb prolapsed, and caused a fatal suppression of urine. The vagina at the upper part was corrugated and inverted. Haller, Disp. Chir. Tom. III. p. 585.

‡ See a remarkable case of prolapsus in the gravid state, where the whole uterus protruded, and reduction was not accomplished till after delivery, by P. C. Fabricius, in Haller, Disp. Chir. Tomus III. p. 434.

§ Vide Memoirs by M. Sabatier, in Mem. de l'Acad de Chir. Tome III. p. 376

the uterus, this must be done; and in one stage an artificial enlargement of the foramen, through which the uterus has protruded, may assist the reduction. If, however, gestation be far advanced, then the incision may require to be made into the uterus when pains come on, that the child may be extracted. But it has happened, that, even in this untoward situation, the natural efforts have expelled the child by the vagina, although the uterine hernia, protruding by a separation of part of the abdominal muscles, hung down so low as the knee.

§ 41. DROPSY OF THE OVARIUM.

The ovarium is subject to several diseases, of which the most frequent is that called dropsy. The appellation, however, is not proper, for the affection is not dependent on an increased effusion of a natural serous secretion or exhalation, but is more akin to encysted tumours, and consists in a peculiar change of structure,* and the formation of many cysts, containing sometimes watery, but generally viscid, fluid, and having cellular, fleshy,† or indurated substance interposed between them frequently in considerable masses. They vary in number and in magnitude. There is rarely only one large cyst containing serous fluid; most frequently we have a great many in a state of progressive enlargement; the small ones are perhaps not larger than peas, others are as large as a child's head, whilst the one which has made most progress may surpass in size the gravid uterus at the full time. The inner surface of the cysts may either be smooth, or covered with eminences like the papillæ of a cow's uterus.‡ Their thickness is various, for sometimes they are as thin as bladders, sometimes fleshy, and an

* Le Dran says this dropsy always begins with a scirrhus, and is only a symptom of it.—Dr. Hunter says he never found any part of a dropsical ovarium in a truly scirrhous state.

† Dr. Johnson's patient had the right ovarium converted into a fleshy mass weighing nine pounds, and full of cysts. Med. Comment. Vol. VII. p. 265.

‡ I have seen the inner surface of the ovarium studded over with nearly two dozen of large tumours. M. Morand notices two cases, in which a similar structure obtained.

inch thick. The fluid they contain is generally thick and coloured, and frequently fœtid, and, in some instances, mixed with flakes of fleshy matter, or tufts of hair; occasionally, it is altogether gelatinous, and cannot be brought through a small opening. The analysis of this has not led to any result of practical utility. The male testicle is subject to a similar disease. The tumour has been seen made up entirely, or in part, of hydatids.*

The effects or symptoms of this disease of the ovarium, may all be referred to three sources, pressure, sympathetic irritation, and action carried on in the ovarium itself. It sometimes, though not often, begins with pretty acute pain about the groins, thighs, and side of the lower belly, with disturbance of the stomach and intestines, and, occasionally, syncope. A few patients feel pain very early in the mammæ; and M. Robert affirms, that it is felt most frequently in the same side with the affected ovarium. In some cases milk is secreted.† But generally the symptoms are at first slight, or chiefly dependent on the pressure or irritation of the parts within the pelvis. The patient is costive, and subject to piles, or strangury, which, in a few instances, may end in a complete retention of urine; the bowels are inflated, and sometimes one of the feet swells. By examining, a tumour may often be felt betwixt the vagina and rectum, and the os uteri is thrown forward near the pubis; so that, without some attention, the disease may be taken for retroversion of the womb.‡ In some time after this, the tumour,

* Sampson, in the Phil. Trans. No. 140, describes an ovarium filled with hydatids, containing 112 pounds of fluid.—Willi mentions a tailor's wife, whose ovarium weighed above 100 pounds, and contained partly hydatids, partly gelatinous fluid. Haller, Disp. Med. Tom. IV. p. 447.

† In a case detailed by Vater, the patient had symptoms of pregnancy, secreted milk, and even thought she felt motion. The belly continued swelled, and she had bad health for three years and a half, when she died. The abdomen contained much water, and the right ovarium was found to be as large as a man's head, containing capsules, filled with purulent-looking matter. The uterus was healthy, but prolapsed, and the ureter was distended from pressure. Haller's Disp. Med. Tom. IV. p. 401. This was not a case of extra-uterine gestation, for the ovarium was divided into cells, and had no appearance of fœtus.

‡ Mr. Home's case, related by Dr. Denman, Vol. I. p. 130, had very much the appearance of retroversion.

in general, rises out of the pelvis,* and these symptoms go off. A moveable mass can be felt in the hypogastric, or one of the iliac regions. This gradually enlarges, and can be ascertained to have an obscure fluctuation. The tumour is moveable, until it acquire a size so great, as to fill and render tense the abdominal cavity. It then resembles ascites, with which it in general comes to be ultimately combined.† Little inconvenience is produced, except from the weight of the tumour, and the patient may enjoy tolerable health for years. But it is not always so, for the tumour sometimes presses on the fundus vesicæ, producing incontinence of urine, or on the kidney, making part of it to be absorbed; and it often irritates the bowels, causing uneasy sensations, and sometimes hysterical affections.‡ It augments in size and carries up the uterus with it;§ so that the vagina is elongated; and this is especially the case, if both ovaria be enlarged.‖ In many instances,

* In some cases it does not ascend out of the pelvis, or if it do, the inferior part of the tumour sinks again into it. Morgagni relates an instance where the ovarium weighed 24 pounds; and the lower part of it filled the pelvis so well, that when it was drawn out, it made a noise like a cupping glass when pulled away from the skin. Epist. 39. art. 39.

† It may be combined with effusion of water in the abdominal cavity. Dr. Bosch's patient had 16 pints of water in the abdomen, and both ovaria were enlarged so as to weigh 102 pounds. This patient complained of great pain and weight in the lower belly, and over the right hip. She was much emaciated, but the menses were regular. When she was tapped, not above two tea-cupfuls of fluid were discharged. Med. and Phys. Journal, Vol. VIII. p. 444.—Mr. French met with a case of ascites and dropsy of the ovarium. The ovarium extended from the pubis to the diaphragm. This patient had voracious appetite. Mem. of Medical Society, Vol. I. p. 234.

‡ Case by Sir Hans Sloane, in Phil. Trans. No. 252.—Dr. Pulteney's patient, whose ovarium weighed 56 pounds, had excruciating pain in the left side, spasms, and hysterical fits. Mem. of Medical Society, Vol. II. p. 265.

§ This point is well considered by M. Voison, in the Recueil Period. Tome XVII. p. 371, et seq.—The bladder may also be displaced, as in the case of Mademoiselle Argant, related by Portal, Cours d'Anat. Tome V. p. 549.

‖ If only one of the ovaria be enlarged, or if both be affected, but only one much increased, the uterus is often not raised, because the ovarium turns on its axis, and the uterus lies below it. In a case with which I was favoured by Dr. Cleghorn, both ovaria were greatly tumified, and could be felt on each side of the navel, whilst immediately beneath that, they seemed to be united by a flat

however, the uterus, in place of rising, prolapses, and occasions repeated attacks of retention of urine, by pressure on the orifice of the bladder. The urine is not in the commencement much diminished in quantity, unless this disease be conjoined with ascites; and the thirst, at first, is not greatly increased. But when the tumour has acquired a great size, the urine is generally much diminished or obstructed. If, however, the bulk be lessened artificially, it is often, for a time, increased in quantity, and the health improved. This is well illustrated by the case of Madame de Rosney,* who in the space of four years, was tapped twenty-eight times; for seven days after each puncture, she made water freely, and in sufficient quantity; the appetite was good, and all the functions well performed; but in proportion as the tumour increased, the urine, in spite of diuretics, diminished, and at last came only in drops. The woman generally continues to be regular for a considerable time, and may even become pregnant.

In the course of the disease, the patient may have attacks of pain in the belly, with fever, indicating inflammation of part of the tumour, which may terminate in suppuration, and produce hectic fever; or the attack may be more acute, causing vomiting, tenderness of the belly, and high fever, proving fatal in a short time; but in many cases, these symptoms are absent, and little distress is felt until the tumour acquire a size so great as to obstruct respiration, and cause a painful sense of distention. By this time, the constitution becomes broken, and dropsical effusions are produced. Then the abdominal coverings are often so tender, that they cannot bear pressure; and the emaciated patient, worn out with restless nights, feverishness, want of appetite, pain, and dyspnœa, expires.

hard substance; and when the urine was long retained, a fluctuation could be perceived before that part. Upon dissection, a firm thick substance was found extending from the pubis to the navel, betwixt the ovaria. This was the uterus and vagina. The uterus itself was lengthened, the cervix was three inches long, and all appearance of os tincæ was destroyed. Her complaints began after being suddenly terrified: first she felt severe pain in the right groin, with weakness of the thigh, and soon afterwards perceived a tumour in the belly, presently another appeared in the left side. She was tapped 16 times.

* Portal, Cours d'Anat. Tome V. p. 549.

The symptoms of this disease, all arising either from pressure or irritation, must vary according to the nature of the parts most acted on, and the peculiar sympathies which exist in the individual. When we consider that, in many instances, the whole constitution, as well as different organs, may bear without injury, a great, but very gradual irritation, it is not surprising that this disease, which, for a long time, operates only mechanically, should often exist for years without affecting the health materially, whilst in more irritable habits, or under a different modification of pressure, much distress, too often referred to hysteria, may be produced.

This disease has sometimes appeared to be occasioned by injury done to the uterus in parturition, as for instance, by hasty extraction of the placenta; or by blows, falls, violent passions, frights, or the application of cold; but very often, no evident exciting cause can be assigned.

This disease is at first sometimes misunderstood, from the most prominent symptom often being tympanites. Even careful examination cannot always early discover a tumour amidst the inflated intestines. Afterwards, fluctuation is discernible, and the disease may be taken for ascites, but in general, the fluctuation is more obscure and circumscribed, being seldom felt in the lumbar region.

In the first stage of this complaint, we must attend to the effects produced by pressure. The bladder is to be emptied by the catheter, when this is necessary; and stools are to be procured. It may be considered, how far, at this period, it is proper to tap the tumour from the vagina, and by injections or other means, endeavour to promote a radical cure. When the woman is pregnant, and the tumour opposes delivery, there can be no doubt of the propriety of making a puncture,* before having recourse to the

* In a case noticed by Dr. Denman, the labour was obstructed until the ovarium was emptied, by piercing it from the vagina. The woman died six months afterwards. Introd. Vol. II. p. 74. In Dr. Ford's case, related by Dr. Denman, the crotchet was employed. See also a case by M. Baudelocque, l'Art. des Accouch. § 1964.

crotchet.(a) But this has only been resorted to, in order to obviate particular inconveniences, and affords no rule of conduct in other cases where no such urgent reason exists. I am inclined to dissuade strongly from any operation at this period, because in a short time the tumour rises out of the pelvis; and then the patient may remain tolerably easy for many years. Besides, the ovarium in this disease contains, in general, numerous cysts; and as these, in the first stage, are small, we can only hope to empty the largest. Perhaps we may not open even that; and although it could be opened and healed, still there are others coming forward, which will soon require the same treatment. Puncturing, then, can only retard the growth of the tumour, and keep it longer in the pelvis, where its presence is dangerous.

When the tumour has risen out of the pelvis, we must, in our treatment, be much regulated by the symptoms. The bowels should be kept open, but not loose, by rhubarb and magnesia, aloetic pills, cream of tartar, or Cheltenham salt. Dyspeptic symptoms may sometimes be relieved by preparations of steel, combined with supercarbonate of soda, or other appropriate medicines, though their complete removal cannot be expected so long as the exciting cause remains. General uneasiness or restlessness, occasionally produced by abdominal irritation, may be lessened by the warm bath, saline julap, and laxatives; whilst spasmodic affecrions are to be relieved by fœtids; and if these fail, by opiates. If, at any time, much pain be felt, we may apply leeches, and use fomentations, or put a blister over the part; or if the activity be great, general blood-letting may be required. Upon the supposition of this disease being a dropsy, diuretics have been prescribed, but not with much success,* and often with detriment. Some have

(a) Where the tumour in the vagina occupies a large space, Dr. Merriman thinks it a warrantable practice to remove it by excision if it consisted of a solid substance, and certainly to puncture it if it contained a fluid. Vide Medico-Chirurgical Transactions, Vol. III. p. 47.

* Dr. Denman justly observes, that diuretics have no effect, Vol. I. p. 122. And Dr. Hunter remarks, that "the dropsy of the ovarium is an incurable disease, "and that the patient will have the best chance for living longest under it, who

supposed, that diuretics do no good whilst the disease is on the increase; but that, when it arrives at its acmé, they are of service. But this disease is never at a stand; it goes on increasing, till the patient is destroyed. When they produce any effect, it is chiefly that of removing dropsical affections combined with this disease; and in this respect, they are most powerful, immediately after paracentesis. With regard to the power of diminishing the size of the ovarium, my opinion is, that they have no more influence on it, than they have over a mellicerous tumour on the shoulder, or over the disease, when it occurs in the testicle. In one case, fomentations and poultices appear to have discussed a tumified ovarium;* and Dr. Hamilton has lately stated, that he has cured seven cases by percussion, or patting for a length of time daily on the tumour, using a bandage so as to make constant compression, giving solution of muriate of lime, and employing the warm bath.† As some tumours seem to diminish, or be absorbed, under the influence of nauseating medicine, it might be supposed that in this formidable disease they might be tried with propriety; but it may justly be questioned, whether continued sickness for such a length of time as would be required to produce any sensible effect on the tumour, would not be as hurtful at last as the disease it was meant to remove; whilst certainly during its operation it is much more distressing.

Having palliated symptoms until the distention becomes troublesome, we must then tap the tumour, which gives very great relief; and, by being repeated according to circumstances, may contribute to prolong life for a length of time.‡ As the uterus may be car-

"does the least to get rid of it. The trocar is almost the only palliative." Med. Obs. and Inq. Vol. II. p. 41.

Willi, however, relates a case of 14 years standing, which was cured by diuretics; and it was calculated that the tumour contained 100 pounds of fluid. Haller, Disp. Med. Tom. IV. p. 541.

* Vide Dr. Monro's fourth case, in Med. Essays, Vol. V.

† Hamilton on Mercurial Medicine, p. 202.

‡ Dr. Denman advises the operation to be deferred as long as possible, and I believe he is right; for every operation is followed by re-accumulation, which is a debilitating process; yet it is astonishing how much may in the course of time

ried up by the tumour, it is proper to ascertain, whether it be the right ovarium or the left which is enlarged; and we should always tap the right ovarium on the right side, and *vice versa:* by a contrary practice, the uterus has been wounded.* When the disease is combined with ascites, it is sometimes necessary to introduce the trocar twice, and the difference between the two fluids drawn off is often very great. We must neither delay tapping so long as to injure by great irritation and distention, nor have recourse to it too early or too frequently, for the vessels of the cavity excrete much faster and more copiously after each operation; and it is to be remembered, that this is a cause of increasing weakness, not only from the expenditure of gelatinous fluid, but also from the increased action performed by the vessels, which must exhaust as much as any other species of exertion.

Finally, it has been proposed, to procure a radical cure, by laying open the tumour, evacuating the matter, and preventing the wound from healing, by which a fistulous sore is produced; or by introducing a tent, or throwing in a stimulating injection.† Some of

be secreted, without destroying the patient. Mr. Ford tapped his patient 49 times, and drew off 2786 pints. The secretion was at last so rapid, that three pints and three ounces were accumulated daily. Med. Commun. Vol. II. p. 123. —Mr. Martineau tapped his patient 80 times, and drew off 6831 pints, or 13 hogsheads; at one time he drew off no less than 108 pints. Phil. Trans. Vol. LXXIV. p. 471.

* In a case of this kind related by M. Voison, the uterus was wounded, and the patient felt great pain, and fainted. She died on the third day after the operation. Recueil Period. Tome VII. p. 372, &c.

† Le Dran relates two cases in the Mem. de l'Acad. de Chir. Tom. III. In the first, the cyst was opened, and the woman cured of the dropsy, but a fistulous opening remained, p. 431. In the second, he made a pretty large incision, and introduced a canula into the sac. The operation was followed by fever, delirium, and vomiting; the woman retained nothing but a little Spanish wine for three weeks. She discharged daily 8 or 10 ounces of red fluid. At length, all of a sudden, 15 ounces of white pus were evacuated, and then the symptoms abated; but a fistula remained for two years; then it healed, p. 442.

Dr. Houston relates the case of a woman in this neighbourhood, in whom he made an incision 2 inches long into the ovarium, and then with a fir splint turned out a great quantity of gelatinous matter and hydatids. He kept the wound open with a tent, and succeeded in curing the patient. The disease was attributed to

these methods have, it is true, been successful, but occasionally they have been fatal;* and in no case, which I have seen, have they been attended with benefit. There are two powerful objections to all these practices, besides the risk of exciting fatal inflammation: the first is, that the cyst is often irregular on its interior surface, and therefore cannot be expected to adhere; the second is, that as the ovarium, when dropsical, seldom consists of one single cavity, so, although one cyst be destroyed, others will enlarge, and renew the swelling; and, indeed, the swelling is seldom or never completely removed, nor the tumour emptied, by one operation. Hence, even as a palliative, the trocar must sometimes be introduced into two or more places.

It has happened, that a cyst has adhered to the intestine,† and burst into it, the patient discharging glairy or fœtid matter by stool.‡ Such instances as I have known, have only been palliated,

rash extraction of the placenta, and had existed for thirteen years. It was attended with violent pains. Phil. Trans. XXXIII. p. 5.

M. Voison relates a case, which was palliated by tapping, and keeping a fistula open. Recueil Periodique, Tom. XVII. p. 381. And Portal gives an instance, where, by keeping the canula in the wound for a short time, a radical cure was obtained, and the person afterwards had children. Cours d'Anat. Tom. V. p. 554.

* De La Porte tapped a woman who had a large tumour in the belly, but nothing came through the canula. He made an incision of considerable length, and, in the course of two hours and a half, extracted 35 lb. of jelly. The lips of the wounds were then brought together. Next day 15 lb. of jelly were evacuated, but presently vomiting and fever took place; and she died on the thirtieth day, having discharged altogether 67 lb. of fluid. This disease was of sixteen months standing, and was attributed to hemorrhage. Mem. de l'Acad. de Chir. Tom. III. p. 452.

Dr. Denman notices the case of a patient, who died the sixth day after injecting the ovarium. Vol. I. p. 122.

† Dr. Monro, in Med. Essays, Vol. V. p. 773, details the history of a patient who had a diseased ovarium, and in whom the tumour pointed about four inches below the navel. It was opened, but nothing but air came out, followed next day by fæces: on the fifth day some pus was discharged. She gradually improved in health, and the tumour of the belly subsided; but in two years afterwards the suppuration was renewed, and she died. In this case, the colon had probably adhered to the ovarium.

‡ Dr. Denman relates the case of a patient, who, having for some time suffered from pain and tenderness about the sacrum and uterus, and uterine hemorrhage,

but not cured, by this circumstance. Sometimes the fluid has been evacuated per vaginam,* or the ovarium has opened into the general cavity of the abdomen, and the fluid been effused there.

There is another disease, or a variety of the former disease, in which bones, hair, and teeth, are found in the ovarium.† The sac, in which these are contained, is sometimes large, and generally is filled with watery or gelatinous fluid. The bony substance, and teeth, usually adhere to the inner surface of the cyst. This disease produces no inconvenience, except from pressure. It has been deemed by some, to be merely an ovarian conception; but it may undoubtedly take place without impregnation: nay, similar tumours have been found in the male sex.‡ It is to be treated as the former disease.

was suddenly seized with vomiting, syncope, pains in the belly, and costiveness; presently a tumour was felt in the right side, and this soon occupied the whole abdomen. This patient was cured, after purging a gelatinous fluid. Med. and Phys. Jour. Vol. II. p. 20.

* Dr. Monro relates a case of supposed pregnancy, in the tenth month of which the tumour was removed by an aqueous discharge from the vagina. In a future attack, however, violent bearing-down pains were excited, and the woman died exhausted. The left ovarium was found greatly enlarged with vesicles. Med. Essays, Vol. V. p. 770.

† See Dr. Baillie's Morbid Anatomy, chap. 20. Dr. J. Cleghorn mentions a woman who died ten days after being tapped. The right ovarium was found greatly enlarged, and had many cells, some containing hair, cretaceous matter, fragments of bone and teeth, others gelatinous fluid. Trans. of Royal Irish Acad. Vol. I. p. 80. In Essays Phys. and Literary, Vol. II. p. 300, a case is mentioned, in which the one ovarium contained many vesicles; the other contained a mass, like brain, with bones and teeth. In the Museum attached to the hospital at Vienna, there is a large ovarium, the inner surface of which is covered with hair. Horstius met with an ovarium containing hair, purulent-looking and oily matter. Opera, p. 249. Schenkius met with fat and hair, p. 556, and Schacher relates a similar case in Haller's Disp. Med. Tom. IV. p. 477. Ruysch, in his Adversaria, says, he met with bones and hair, and Le Rich, in the Hist. de l'Acad. des Sciences, 1743, met with hair and oil, in cells, together with bones and teeth. See also Recueil Period. Tome XVII. p. 462.

‡ Duverney saw a tumour extirpated from the scrotum, containing fleshy matter and bones. Œuvres, Tome II. p. 562. And M. Dupuytren presented a report to the Medical School at Paris, relating the history of a tumour found in the abdomen of a boy, containing a mass of hair, and a fœtus nearly ossified. It was

§ 42. OTHER DISEASES OF THE OVARIUM.

The ovaria are sometimes affected with scrophula, and the tumour may prove fatal by producing retention of urine. When it rises out of the pelvis, it is often productive of hypochondriasis, and very much resembles the ovarian disease, formerly mentioned, but is firmer, seldom gives a sensation of fluctuation, and sometimes is very painful when pressed. It rarely terminates in suppuration; but when it does, the fluid, as Portal observes, is *blanchatre*, *filamenteux*, *grumeleux*, *mal digeré*. The substance of the ovarium is soft, and similar to that of other scrophulous glands. Occasionally it contains a cheesy substance, which is found, at the same time, in the mesenteric and other glands. Burnt sponge, cicuta, mercury, electricity, laxatives, &c. have been employed, but seldom with benefit. The most we can do is to palliate symptoms, such as retention of urine, costiveness, dyspepsia, or pain.

The ovarium may also be enlarged, and become hard and stony,* or converted into a fatty substance.† Sometimes it is affected with the spongoid disease, and is changed into a substance

supposed, that at conception, one germ had got within another. See Edin. Med. Jour. Vol. I. p. 376. From the respectable evidence of Baudelocque, Le Roy, &c. this cannot be placed on a footing with Halley's case of a greyhound dog, who voided by the anus a living whelp! Phil. Trans. Vol. XIX. p. 316. I believe that bones, hair, &c. have been found in a gelding.

* Schlencker mentions a woman, who, soon after delivery, felt obtuse pain in the left side, and presently a swelling appeared in the belly. She had bad appetite, swelled feet, prolapsed uterus, and suppression of urine and fæces. The left ovarium was hard and stony, and weighed three ounces. Haller, Disp. Med. Tom. p. 419. In this case the tumefaction of the belly could not be caused by the presence of the ovarium, but rather by the pressure on the intestines.

† Vide case by Fontaine, in Haller, Disp. Med. Tom. IV. p. 485. The patient had tumour of the abdomen, with darting pains in the left side, extending to the thigh. The left ovarium weighed 10 pounds, the right was as large as the fist, and both consisted of fatty matter. Portal likewise relates a case of this disease, where the right ovarium was as large as a man's head, very hard, and filled with steatomatous matter, weighing altogether 35 pounds. The uterus and bladder were turned to the left side. No water was effused, but the person was cut off by hectic and diarrhœa. Some steatomatous concretions were found in the lungs. Cours d'Anatomie, Tom. V. p. 549.

like brain, with cysts containing bloody serum. The tumour in this disease, feels tense and elastic. It may burst through the abdominal parietes, and throw out large fungous excrescences. Frequently we find, on cutting an enlarged ovarium, that part of it resembles the spongoid structure, having bloody fungous cysts; part is like firm jelly, and part like cartilage, or dense fat. Often the uterus participates in the disease. I have seen a mass of this kind weigh thirteen pounds. I have never found the ovarium cancerous.

§ 43. DEFICIENCY.

The ovaria may be wanting on one or both sides,(*b*) or may be unusually small. In such cases, it sometimes happens, that the growth of the external parts stops early, and the marks of puberty are not exhibited. The ovarium may form part of a heniary tumour.

§ 44. DISEASES OF THE TUBES AND LIGAMENTS.

The tubes may be wanting, or impervious, and are subject to many of the diseases of the ovaria.

The round ligaments may partake of the diseases of the uterus, or may have similar diseases, originally appearing in them. When they are affected, pain is felt at the ring of the oblique muscle, and sometimes a swelling can be perceived there.

CHAP. XI.

OF MENSTRUATION.

The periodical discharge of sanguineous fluid, which takes place every month from the uterus, is termed the menses; and

(*b*) See a case of deficiency of the ovaria, by Charles Pears, F. L. S. in the Phil. Trans. for 1805. This woman died at the age of twenty-nine. She had never menstruated. She ceased to grow at the age of ten years.

whilst the discharge continues, the woman is said to be out of order, or unwell.

In some instances, the discharge takes place at puberty, without any previous or attendant indisposition; but in most cases, it is preceded by uneasy feelings, very often by affections of the stomach and bowels, pain about the back and pelvis, and various hysterical symptoms. These affections, which are more or less urgent in different individuals, gradually abate; but at the end of a month, return with more severity, attended with colic pains, quick pulse, sometimes hot skin, and a desire to vomit. There now takes place from the vagina, a discharge of a serous fluid, slightly red, but it does not in general become perfectly sanguineous for several periods. When the discharge flows, the symptoms abate; but frequently a considerable degree of weakness remains, and a dark circle surrounds the eye. In a short time the girl menstruates, often without any other inconvenience than a slight pain in the back, though sometimes, during the whole of her life, she suffers from many of the former symptoms every time she is unwell; and all women, at the menstrual period, are more subject than at other times to spasmodic and hysterical complaints.

When a girl begins to menstruate, certain changes take place, denoting the age of puberty. The uterus becomes more expanded, and receives its adult form; the vagina enlarges; the mons veneris swells up, and is covered with hair; the pelvis is enlarged; the glandular substance of the breasts is unfolded, and the cellular part increased; at the same time the mental powers become stronger, and new passions begin to operate on the female heart.

The age at which menstruation begins, varies in individuals, and also in different climates. It is a general law, that the warmer the climate, the earlier does the discharge take place, and the sooner does it cease. In Asia, for instance, the menses begin about nine years of age; whilst in the north, a woman does not arrive at puberty until she is eighteen or twenty years old; nay, if we may credit authors, in very cold countries, women only menstruate in the summer seasons. In the temperate parts of Europe, the most common age at which the menses appear, is thirteen or fourteen years.

The quantity of the discharge varies, also, according to the climate and constitution of the woman. In this country, from six to eight ounces are lost at each menstrual period; but this does not flow suddenly; it comes away slowly for the space of three or four days. Some women discharge less than this, and are unwell for a shorter space of time: others, especially those who live luxuriously, and are confined in warm apartments, menstruate more copiously, and continue to do so for a week.

In this country menstruation ceases about the forty-fourth year, lasting for a period of about thirty years.* In the East the menses begin soon, flow copiously, and end early; the women in Asia, for example, being old, whilst the Europeans are still in their prime. In the north the menses begin late, flow sparingly, and continue long.

The menses are obstructed during pregnancy,† and the giving of suck; but if lactation be very long continued, the menses return, and the milk disappears or becomes bad.

The discharge appears to be yielded by the uterine arteries, but is not an extravasation or hemorrhage, for when collected, it does not separate into the same parts with blood, neither does it coagu-

* The periods of the commencement and cessation of the menstrual discharge, mentioned by our author, as occurring in Great Britain, agree pretty nearly with what is observed to take place in the United States.

† This is a point still debated. The weight of authority is, however, decidedly against menstruation continuing during pregnancy. By Baudelocque, Denman, and almost all the modern writers, it is denied. Those who maintain the contrary opinion, have very probably mistaken a hemorrhage from the vagina, which sometimes recurs with considerable periodical regularity, for the menstrual flux. Several cases of this kind have come under my own observation, where I had an opportunity of examining the discharge accurately. In every inatance, I found it pure *coagulable blood.*

By adverting to the state of the pregnant uterus, this is exactly what we should be led to expect. Contemporary with conception, we know that the uterine cavity is lined with the membrana decidua, and that soon afterwards the os tincæ is completely sealed with impacted mucus. Were an effusion therefore to take place, especially in the early months of gestation, it would destroy the attachment of the membrane, and produce all the consequences of uterine hemorrhage.

It would seem, moreover, that the action which the vessels of the uterus take on to fabricate and support this membrane, is totally incompatible with the men-

late.(c) In many instances a great quantity has been retained for some months in the uterus and vagina, but it never has been found clotted when it was evacuated.

Menstruation has been attributed to the influence of the moon, to the operation of a ferment in the blood, or in the uterus, to the agency of a general or local plethora, or to the existence of a secretory action in the uterus.* The last of these is the most pro-

strual secretion. The two actions cannot co-exist. This is proved not only by the alleged cessation of the menses during pregnancy, but still more clearly by the fact which has not been sufficiently attended to, that in a large proportion of cases of obstinate amenorrhœa, the membrana decidua exists, and that the first symptom of the return of the discharge is the coming away of the membrane. Of the identity of the two membranes there can be no doubt. It has been ascertained by Dr. Baillie and many other competent judges. C.

(c) The celebrated John Hunter was, perhaps, the first physiologist who took notice publicly of this fact, at least in Great Britain. In his Lectures on the Theory and Practice of Surgery, (as quoted by Dr. R. W. Johnson, System of Midwifery, 2d edition, 4to. p. 34 and 35) he observes, that "the blood discharged in menstruation, is neither similar to blood taken from a vein of the same person, nor to that extravasated by an accident in any other part of the body; but is a species of blood changed, separated, or thrown off from the common mass, by an action of the vessels of the uterus, in a process *similar to secretion;* by which action the blood having lost its living principle, it does not afterwards coagulate." In his Treatise on the Blood, vol. I. p. 24, Philadelphia edition, he says, "in healthy menstruation, the blood which is discharged does *not coagulate;* in the irregular, or unhealthy, it does. The healthy menses, therefore, (he continues) show a *peculiar action* of the constitution; and it is most probably in this action, that its salubrious purposes consist."

* I am too, very much inclined to believe, that menstruation results from a secretory action of the uterus. Every other theory on the subject is indeed totally irreconcilable with facts. I will briefly enumerate the leading arguments by which the doctrine may be defended.

1. That the uterus in its villous and vascular structure resembles in some degree a gland, and also, in its diseases, being equally liable to scirrhus, cancer, &c. &c.

2. That, like other secretory organs, blood is very copiously diffused through it.

3. That by the arrangement of its vessels, it is evidently designed that the circulation should be retarded for the purpose of secretion. The arteries are not only exceedingly convoluted, but they are larger and with thinner coats than their corresponding veins. Thus, Haller says, "the blood is brought to the womb in greater quantity, and more quickly through its lax and ample arteries,

bable opinion; but as this work is meant to be practical, I think it wrong to devote more time to the discussion of theories and speculations. The use of menstruation seems to be to preserve the womb in a fit state for impregnation; at least, we know, that the presence of menstruation is generally necessary to, and indicates a capability of, conception.

and on account of the rigidity and narrowness of the veins, it *returns with difficulty.*"

4. That, in common with other secretions, menstruation is often, at first, imperfectly done, and is subject afterwards to vitiation and derangement. At its commencement the discharge is commonly thin, colourless, and deficient, and recurs at protracted and irregular intervals with pain and difficulty.

5. That, in many of the inferior animals, during the season of venereal incalescence, there is an uterine discharge which is undoubtedly *a secretion.* This answers seemingly the same end as menstruation, namely, giving to the uterus *an aptitude to conception.* Though this fluid generally differs from the menses in complexion, yet in some instances they are precisely similar. Whenever the venereal desire suffers a violent exascerbation from restraint, or other causes, the discharge in these animals becomes red. This has been more especially remarked in bitches kept from the male.

6. That the menses are a fluid *sui generis*, or at least varying very essentially from the blood, having neither its *colour* nor *odour*, nor *coagulability*, and on *chemical analysis* present *different results.* These last circumstances are enough alone to establish the theory.

7. To the objection that the uterus is not sufficiently glandular for the function of secretion, it has been, I think, very satisfactorily replied, that there is hardly a viscus or surface of the body which is not competent to the secretion of a fluid. It would really seem that no operation of the animal economy requires a less complex apparatus. Of what indeed does a gland consist, except a congeries of vessels? Even the most perfect of the secretions are affected by this simple contrivance. If a few vessels, "creeping over the coats of the stomach," can secrete the gastric liquor, why may not the infinitely more glandular organization of the uterus elaborate the menstrual fluid? *(d)* C.

(d) Saunders has been presumed by some, to have been the first who considered the catamenia as a secretion; but Bordeu, a French physiologist of great merit and of earlier date, treats of the uterus as a gland; and of course, it is to be presumed, must have viewed the menses as a secreted fluid. Haller also, in his Notes on the Prelectiones Academicæ of Boerhaave, [Amstelodami, A. D. 1744,] speaks of the menses as a secretion. His words are "Sed facile ipsa fabrica partium demonstrat uterum naturale organum esse *hujus secretionis.*" Vol. VI. p. 72. Dr. Chapman says, that Dr. Craven supported this opinion, in a Thesis published at Edinburgh in the year 1778.

The action of menstruation has an effect on the vascular and nervous system, and on the stomach and bowels. All tender or diseased parts are worse, and, if visible, their vessels are more turgid previous to menstruation. The nervous system is more irritable, and convulsive affections of the body, or aberrations of mind, are more frequent at this period than at other times. The stomach may be affected with severe sickness and violent retching, or by sympathy with the skin, may produce urticaria, whilst the bowels for a day or two before menstruation, sometimes are much inflated and costive, or at the period itself are affected with spasm.

As the female system is more irritable during menstruation than at other times, and as changes effected in the system, or in particular organs, at that time, may come to interfere with the due performance of the uterine action, it is a general and proper custom with physicians, and a practice consonant to the prejudice of women themselves, not to administer active medicines during the flow of the menses. It is also proper, that indigestible food, dancing in warm rooms, sudden exposure to cold, and mental agitation, especially in hysterical habits, be avoided as much as possible. By neglecting these precautions, the action may either be suddenly stopped, or spasmodic and troublesome affections may be excited.

CHAP. XII.

OF HYSTERIA.

Although hysteria be not a diseased state of menstruation, yet, as it is a very general attendant upon deviations of that action, and a very frequent and distressing complaint, to which women are subject, it will be proper to notice it briefly at this time.

In the well marked hysteric paroxysm, a sense of pain or ful-

ness is felt in some part of the abdomen, most frequently about the umbilical region, or in the left side, betwixt that and the stomach. This gradually spreads, and the sensation of a ball is felt passing along. It mounts upwards, and by degrees reaches the throat, and impedes respiration, so as to give the feeling of a globe in the œsophagus, obstructing the passage of the air, and, as Van Swieten observes, the throat appears sometimes really to be distended. The patient now sinks down convulsed, and apparently much distressed in breathing, uttering occasionally, shrieks, something like the crowing of a cock, or sobbing violently, or otherwise indicating a spasm of the muscles of respiration. She is generally pale, and frequently insensible, at least during part of the fit, and seems to be in a faint; but when she recovers, she is conscious not only of having been ill, but of many things which passed in a state of apparent insensibility. After remaining for some time in a state of considerable agitation of the muscular organs, the affection abates, and the patient remains languid and feeble, but gradually recovers, and presently is restored to her usual health. This restoration is accompanied with eructation, which indeed often takes place during the paroxysm; and also by the discharge of limpid urine, which, by Sydenham, is considered as a pathognomonic symptom of hysteria. Headach is also apt to follow a fit.

Besides producing these regular paroxysms, hysteria still more frequently occasions many distressing sensations, which are so various, as not to admit of description. Of this kind are violent headach, affecting only a small part of the head, sudden spasms of the bowels, dyspnœa, with or without an appearance of croup, and sometimes attended with a barking cough, irregular chills, and sudden flushings of heat, spasmodic pains, palpitation, syncope, &c. These, if severe, or frequently repeated, are generally attended with a timid or desponding state of mind.

During an hysteric fit, the patient is to be laid in an easy posture, a free admission of cool air is to be procured, the face is to be sprinkled with cold vinegar or Hungary water, volatile salts are to be held to the nostrils, and if she can swallow, 30 drops of tincture of opium are to be administered, with the same or a greater quantity of ether, in some carminative water; or should there be a

tendency to syncope, a drachm of the spiritus ammoniæ aromaticus may be conjoined. A similar combination of opium is the most powerful remedy in the different hysterical affections above enumerated.

I may farther remark, 1st. that local pain is frequently removed by sinapisms, with or without the internal use of opium; 2d. that severe affections of the organs of respiration, particularly if accompanied with full and frequent pulse, are more readily relieved by the lancet than by antispasmodics; and it is a great error to suppose that the mere name of hysteria can render a remedy improper, which both experience and the general principles of pathology prove to be worthy of confidence; 3d. although the lancet be proper in urgent cases, it ought not to be frequently resorted to, but the paroxysms are to be kept off by a strict attention to the state of the bowels, and the employment of fœtids, or mild tonics; 4th. in repeated attacks of spasmodic breathing, like croup, the effect of an emetic may be tried before again taking blood, particularly if venesection have been recently employed; after the operation of the emetic, a suitable dose of tincture of opium may be given, and we delay the lancet till the effect of these be seen. In the mean time the patient is in no danger of dying; 5th. a state of coma demands either general or local bleeding, according to the state of the patient and the previous depletion; 6th. irregular action of the heart, or palpitation, requires, during the attack, ether and opium; but if these fail, and the patient be plethoric, some blood ought to be abstracted.

The prevention of regular hysteric fits, or of individual symptoms, is to be attempted by preserving a *correct* state of the bowels, or even giving, every day, pretty powerful purges, the administration of preparations of steel, or other tonics, moderate exercise, and the cold bath, if it do not produce languor or coldness and headach; the mind ought also to be called as much as possible from brooding over the disease, for in hysteria, the patient is frequently desponding, and anticipating many evils. The menstrual action, if irregular, must, if possible, be rectified by appropriate remedies. The diet should be light, and rather sparing, and all causes of debility must be avoided. Fœtids are sometimes of use.

Hysteria may occur during the course of other diseases, or in the stage of convalescence from them. In the first case, it may cause some deviation from the regular progress or train of symptoms of the disease, and, it is to be feared, sometimes calls the attention of the practitioner from more serious parts of the patient's malady.

CHAP. XIII.

Of Diseased States of the Menstrual Action.

§ 1. AMENORRHŒA.

Amenorrhœa, or absence of the menses, has been divided into the retention, or *emansio mensium*, and the suppression of the menses. By the first term, we are to understand, that the menses have not yet appeared, the action being longer than usual of being established. By the second, is meant the interruption of the action which has already been established, and hitherto performed. This may be subdivided into checked menstruation, and prevented menstruation, commonly called obstruction.

The retention of the menses is very generally attended with chlorosis, or a feeling of weariness and debility, with dislike to active employment; a pale or sallow complexion, cathectic appearance, œdematous swelling of the legs and feet; costiveness, dyspeptic complaints, such as flatulence, acidity, loathing of food, but craving for indigestible substances, as chalk, lime, or cinders; pains of the head, and different parts of the body; swelling of the belly, with hysteric symptoms, such as palpitation, or dyspnœa; and if this state be not soon removed, it is apt to end either in consumption or dropsy.

The menses, may, from one person not arriving so early as another at puberty, be longer of appearing in some women than in

others; and in such cases, no peculiar inconvenience attends the retardation. But when the retention proceeds from other causes, it is to be considered as a disease; and generally, is to be attributed to a want of vigour in the system; by which, not only a new action is prevented from being formed, but also those which were formerly performed, become impaired. In some cases, indeed, the absence of the menses depends upon a malformation of the organs of generation, a deficiency of the ovaria,* an imperfect development of, or a special want of energy in, the uterus; but in far the greatest number of instances, the action is postponed, merely from general debility of the system; and accordingly, the most successful mode of treatment consists in improving the health, and increasing the strength of the patient. This is to be done by regular exercise, proportioned to the ability of the person; the use of the hot salt water bath every day, succeeded by frictions with dry flannel, or a soft brush: sufficient clothing, and particularly a flannel dress; a nourishing and digestible diet, with a proper portion of wine; avoiding every thing which disagrees or ferments; the administration of tonic medicines, particularly preparations of iron, such as chalybeate waters, tincture of muriated iron, or the carbonas ferri precipitatum combined with myrrh. Tannin, to the extent of a hundred grains in the day, has also been proposed. The use of the Bath waters, internally as well as externally, is of service in the chlorotic state, but hurtful if the patient be of a full habit. Strict attention must in every case be paid to the state of the bowels. This is necessary in the chlorotic condition, to stimulate the system; for the bowels are generally torpid, and communicate a similar debility to the rest of the system. The aloetic or compound rhubarb pill should be freely employed. The cold bath in chlorosis is seldom proper, as it is apt

* There is much reason to believe, that an influence somehow derived from the ovaries, excites the uterus to the menstrual effort.—Certain it is, that in several instances, a permanent suppression of the menses has followed the loss of these organs. May not amenorrhœa, oftener than we suspect, be occasioned by a diseased state of the ovaries? This, at least, was the opinion of the celebrated Cullen. Cases have also occurred, where, from original deficiency of the ovaries, menstruation never took place. C.

to be followed by chilness, headach, and languor. It is only useful when succeeded by a sense of heat and comfort. The warm salt water bath is generally of greater service. Besides this general plan, it has also been proposed, to excite more directly the uterine action, by marriage, and the use of emmenagogues; but with respect to the latter part of the proposal, I must observe, that some of these, if rashly, employed, may, from their stimulating qualities, do harm; and they do not generally succeed without the use of such means as tend to invigorate and improve the system. Should the tonic plan, however, fail, then we may employ some of those medicines, which will be presently mentioned.

Chlorosis, whether produced in young girls, or succeeding to abortion, laborious parturition, or fever, is often attended with symptoms much resembling phthisis pulmonalis. In many instances the pulse continues long frequent; there is nocturnal perspiration; considerable emaciation, with cough and pains about the chest; and yet the person is not phthisical, she suffers chiefly from debility; but if great attention be not paid to improve the health, the case may end in consumption; and hence many consumptive women date the commencement of their complaints from an abortion, orfrom the birth of a child, succeeded by an hemorrhage. In chlorosis, the symptoms are induced, not by previous pulmonic affections, but by some other evident cause of weakness; the pulse, although frequent, is not liable to the same regular exacerbation, as in hectic; a full inspiration gives no pain, and little excitement to cough; the person can lie with equal ease on either side; the cough is not increased by motion, nor by going to bed, but it is often worst in the morning, and is accompanied with a trifling expectoration of phlegm. It is not short, like that excited by tubercles, but comes in fits, and is sometimes convulsive; whilst palpitation, and many hysterical affections, with a timid and desponding mind, accompany these symptoms. The bowels are generally costive, and the person does not digest well.

In chlorosis, attended with symptoms resembling phthisis, it is of considerable utility, to administer, occasionally, a gentle emetic, and at the same time the bowels must be kept open. Myrrh, combined with the oxide of zinc, is, I think, of approved efficacy; and

the ammonia, given in the form of an emulsion with oil, very often is effectual in relieving the cough. A removal to the country, and the use of moderate exercise on horseback, will contribute greatly to the recovery. The diet ought to be light but nourishing. In many cases milk agrees well with the patient, but it is not necessary to restrict her from animal food. Pain in the side may be removed by the application of a warm plaster; and, if the cough be troublesome, the squill may be used as an expectorant, and an opiate should be given at bed-time. If the skin be permanently hot, or irregularly hot and cold, without weakening perspiration, the tepid bath is of service, or small doses of saline julap may be given. Should the person be of a phthisical habit, and the symptoms increase or continue obstinate, it will be proper to remove her to a mild climate, or the southern part of the island. Emmenagogues are either useless or detrimental.

If retention should be combined with a plethoric state, the best plan is to use purgatives regularly, in a degree proportioned to their effect on the system, and make the patient take as much exercise as she can do without producing fatigue.

Suppression of the menses may take place under two circumstances. The discharge may be suddenly checked during its flow, or it may be prevented from taking place at the proper period, by the operation of certain causes previous to its expected return. The first may be called checked menstruation, and it is produced chiefly by such causes as are capable of operating powerfully and speedily, on either the nervous or vascular systems. The most frequent of these causes are violent passions of the mind, and the application of cold to the surface of the body. The effect is to stop the discharge, and produce great pain in the uterine region, with spasm of the stomach or intestines, violent hysterical affections, and not unfrequently smart fever. After these subside, the womb may still be so much injured, or the general health so impaired, that menstruation may not return for many months. The most effectual means of relieving these acute symptoms, are the semicupium, with full doses of laudanum, combined with ipecacuanha, or with the saline julap, and warm diluents. A clyster is to be given to open the bowels, and this, if necessary, is to be suc-

ceeded by a purgative. If there be febrile symptoms, some blood should be taken from the arm. If laudanum cannot be retained in the stomach, it must be given as a clyster, with some assafœtida, and the belly fomented and rubbed with tincture of soap and opium. Should the menses not return at the next period, we must proceed as shall presently be directed.

The menses may be prevented from returning at the regular time, by the interference of causes during the interval. This, which has been called obstruction, is naturally produced by pregnancy, and, very generally, by such diseases as tend greatly to weaken the patient. The first of these causes is soon recognised, by its peculiar effects. In the second, the effect is often mistaken for the cause; the bad health being attributed to the absence of the menses, and much harm frequently done by the administration of stimulating medicines. But in such cases it will be found, upon inquiry, that before the menses were suppressed, the patients had begun to complain. In them, the irregularity of the menses is symptomatic, and generally indicates considerable debility, induced, perhaps, by great fatigue, bad diet, loss of blood, or long continued serous discharge, hectic fever, or dyspepsia. At the same time, it is also certain, that in some instances, the popular opinion, that bad health is produced by obstruction of the menses, is correct. For, if other organs, as for instance, the stomach or liver, may become impaired in their action, and occasion disease, I see no exemption which can be claimed for the uterus from a similar state, and this state unquestionably may influence the constitution. Repeated abortion, or excessive venery, may in this way, render the uterus incapable of performing its function, although the general health may not for a length of time be injured. The existence likewise, of a different action in the womb, may prevent menstruation; hence the effect of one species of fluor albus, that proceeding from the cavity of the womb, in sometimes causing obstruction.

The immediate and remote effects of suppression, are much modified by the previous state of the system, particularly with regard to irritability and plethora; and also by the condition of in-

dividual organs,* which, if already disposed to disease, may thus be excited more speedily into a morbid action. In many cases, nausea, tumour of the belly, and other indications of pregnancy, are produced.

It also sometimes happens, that in consequence of suppression of the menses, hemorrhage takes place from the nose, lungs, or stomach; and these discharges do occasionally, observe a monthly period, but oftener they appear at irregular intervals. Recorded instances of vicarious discharges from almost every part of the body are so numerous, that I might fill a page with mere references.

When suppression of the menses takes place in consequence of some chronic and obstinate disease, such as consumption or dropsy, it would be both useless and hurtful to attempt, by stimulating drugs, to restore menstruation. But in those cases, where the menses are suppressed in consequence of some removable cause, which we conclude, if there be no symptoms of other incurable disease, it is proper to interfere, both as the suppression is a source of anxiety to the patient, a cause of farther injury, and also as the rational means of restoration tend to amend the health.

It is proper, in our curative plan, to recollect, that the suppression may take place in different circumstances of the constitution. It may occur with a debilitated condition, in which case we are to proceed much in the same way as in retention of the menses, with regard to medicine and diet. Moderate exercise, particularly on horseback, and a residence in the country, will be of much advantage, and where there is not decided chlorosis, the cold sea bath will be of advantage, provided it do not produce headach, chilness, or languor. In that case, it must be tepid. Great attention must be paid to the bowels, and the digestive powers must, if possible, be increased by steel and bitters, such as uva ursi, combined with soda. Along with the tonic plan of treatment, it

* Baillou has observed, that both in young girls, and elderly women, when the menses are obstructed or irregular, the spleen sometimes swells; and subsides again when the menses become regular. De Virgin. et Mulier. Morbis. Tomus IV. p. 75.

will be proper to have recourse to the use of emmenagogue medicines, such as savin,* hellebore,† madder, myrrh, mustard seed, guaiac, valerian, or nitrous acid: and of these, the three first are the most active.‡ About the time when the menses are expected

* From 5 to 10 grains of the powdered leaves may be given three or four times a day.

† A drachm of the tincture may be given twice or thrice daily.

‡ In suppression of the menses, evidently connected with atony of the uterus, I have had some success with the tinct. cantharid. I give it in the dose of ten drops, morning, noon, and night, gradually increasing the quantity till it amounts to two or three drachms in the day. The most obvious effects of this medicine, which I have observed, are an increase in the force of the pulse, and a very copious flow of urine.

From the sp. terebinth. I have also, under similar circumstances derived some advantage.

In one case of this complaint, in which there was general torpor of the system accompanied with a low degree of temperature, I administered phosphorus, but its use was interrupted too soon, by the prejudices of the patient, to judge of its efficacy. The phosphorus is a most powerful medicine, and requires great care in its administration. I gave of it, a tenth of a grain intimately blended with olive oil. Even in this small dose, it produced a universal glow and excitement. When properly regulated, phosphorus is both a safe, and I believe, an eminently useful remedy. In the armies of France, it has recently been employed, I am told, with extraordinary success in typhus fever, gangrene, &c.

Does it not also promise to do good in many other diseases, such as paralysis, epilepsy, chronic mania, &c. &c. C. (e)

(e) To the above list of emmenagogue medicines, may be added the polygala senega, first used in this complaint, as far as I know, by Dr. Hartshorne of this city, and introduced to the notice of practitioners generally, by Dr. Chapman, in a paper on this subject inserted in the Eclectic Repertory for October, 1811; in which some interesting cases and remarks, in illustration of the use of this article of the materia medica are given.

The mode in which it is prepared and used, is as follows. In making the decoction, a pint of boiling water is added to an ounce of the senega, bruised in a close vessel; and it is suffered to simmer over the fire, till the quantity is reduced one-third; to prevent nausea, it is best to make the addition of an aromatic, such as the orange peel or cassia. Four ounces of this decoction at a medium, is to be given during the day. But at the time when the menstrual effort is expected to be made, and till the discharge is actually induced, the dose is to be pushed as far as the stomach will allow. In the intervals of the menstrual periods, the medicine is directed to be laid aside for a week or two; as without these intermissions it becomes nauseous and disgusting to the patient. While under a course of the senega, it is recommended to keep the general

to appear, it is sometimes of advantage to exhibit a mustard emetic, and to make use of the warm bath or semicupium or pediluvium. Tourniquets have, about this time, been applied to the thighs, but not with much benefit. Electricity, directed so as to act on the uterus, is occasionally of service. Blisters have also been applied to the thighs.

When along with suppression of the menses, there is a plethoric condition, and more especially, if there be a febrile state, marked by heat of the skin, frequent pulse, flushing of the face, and irregular pains in the chest or abdomen, stimulating medicines are hurtful. It is, in this state, of advantage to keep the bowels open, by the daily use of some saline purgative, dissolved in a considerable quantity of water: and should there be dyspnœa, with pain about the chest, increased by inspiration, it will be proper to take away some blood. Should the skin still remain hot, the common saline julap will be of service. The febrile symptoms being removed, much advantage may be derived from a combination of myrrh, oxyde of iron, and the supercarbonate of potash; and if emmenagogues be thought advisable, the black hellebore is the best. The aloetic pill is the best purgative.*

In the flabby relaxed habit, in which there is a disposition to watery effusions, laxatives, squills, and preparations of steel, with

system properly regulated; and it is observed, that excessive excitement or debility is to be equally obviated by the use of the appropriate remedies. For fuller information on this subject than can be compressed into the limits of a note, the reader is referred to the interesting paper by Dr. Chapman, above alluded to.

* In chlorosis, and, indeed, in all the forms of amenorrhœa, I have found purges very beneficial. Calomel and aloes combined, I have preferred in these cases. To be useful it is necessary to continue this plan of treatment for weeks.

Professor Hamilton, of Edinburgh, who is a most skilful practitioner in female complaints, advises very strenuously, a mixture of digitalis and the sp. æther. nitros. in chlorosis. The former, he directs in large doses, as much as ten drops of the tincture every hour. It would seem that digitalis is only applicable to those cases of the disease, which are attended with œdematous swellings, but he does not thus restrict its administration. I have never had occasion to try the medicine. But certain it is, that among the best of the emmenagogues, are the active diuretics. C.

regular exercise, and frequent friction of the whole body, are the proper remedies of a general nature.

§ 2. FORMATION OF AN ORGANIZED SUBSTANCE.

It sometimes happens, that the uterus, instead of discharging a fluid every month, forms a membranous or organized substance, which is expelled with pains and hemorrhage, like abortion. Morgagni* describes this disease very accurately. The membrane, he says, is triangular, corresponding to the shape of the uterine cavity; the inner surface is smooth, and seems as if it contained a fluid; and that it does so, I have no doubt from my own observation; the outer surface is rough and irregular. According to Morgagni, the expulsion is followed by lochial discharge.(*g*)

Dr. Denman supposes, that no woman can conceive who is affected with this disease; but some cases, and, amongst others, that related by Morgagni, are against this opinion. Mercury, bark, chalybeates, myrrh, and injections, have all been tried, but without much effect. Time, in general, removes the disease better than medicine, which is only to be advised for the relief of pain, weakness, or any other symptom which may attend or succeed to this state. A knowledge of this disease may be of great importance to the character of individuals.

Chaussier mentions a case, where this membrane presented with pain at the orifice of the uterus, and was pulled away entire with the fingers. It was as large as a fig, and filled with bloody fluid. Collomb describes a membranous protrusion somewhat similar, which he conceives to be a prolapsus or eversion of the internal membrane of the uterus, and which was removed by ligature as a polypus.†

* Vide Epist. XLVIII. Art. 12.

(*g*) For the purpose of expelling this membrane the volatile tincture of gum guiacum has been recommended, but in general it has failed in affording relief, as far as my experience goes. It is in cases of this description that the polygela senega had been particularly recommended; its use is theoretically supported by its supposed peculiar power in detaching the membrane of the croup.

† Dict. des Sciences Medicales, art. Matrice.

§ 3. DYSMENORRHŒA.

Some women menstruate with great pain, and the discharge generally takes place slowly, and is sparing. This disease is called dysmenorrhœa. It seems to be dependent on an imperfect menstrual action; and this opinion is supported by observing, that mild emmenagogues give relief, but those of a stimulating quality are not so proper. Saffron, madder, or rue, are often of service; at the same time, the warm bath, or semicupium, is to be employed for a day or two previous to menstruation, and should be repeated every night, during its continuance. The bowels are to be kept in a regular state, by the careful exhibition of laxatives, and the general health is to be attended to on general principles. During the attack, nothing gives so much relief as opium, particularly if combined with ipecacuanha, and given in a full dose so directed, by tepid diluents, as to produce perspiration. It is to be given, if possible, just before the attack. If it cannot be kept on the stomach, it must be given as a clyster. The warm hip bath is also of great benefit during the paroxysm.*

This state of the womb sometimes produces, besides uterine pain, spasmodic affection of the bowels, or violent bearing-down efforts of the abdominal muscles, as if it were intended to expel the womb itself. Such efforts are also sometimes made periodically, when the menses are altogether or nearly obstructed. Under such circumstances, we must examine carefully into the state of the womb, and the appearance of the discharge, or whether fibrous shreds are not expelled. If no organic affection can be dis-

* Nothing I have found to afford more relief in painful menstruation than large doses of opium and camphor. This medicine, however, will often fail. The extracts of hyoscyamus has been highly extolled. But it is certainly inferior to opium. It would be well, I think, to try the datura stramonium, not only in this, but in amenorrhœa generally.

Blisters, in those cases, should not be omitted. When applied to the sacrum, or the lowest of the lumbar vertebra, they will sometimes remove the pain and bring on a free discharge of the menses. There is, however, unfortunately, in private practice, a great repugnance to the application of blisters to these parts. C.

covered, and the whole appears to arise from spasm, we have only to trust to opium in the meantime, with such treatment in the intervals, as the state of the system may point out. Some women though they menstruate abundantly, suffer much pain, not only in the uterine region, but also in the belly, like colic, accompanied with violent vomiting and headach. This is relieved by bitters, tincture of hellebore, and especially laxatives during the interval, and by opiates during the attack of pain.

§ 4. COPIOUS MENSTRUATION.

Some women menstruate more copiously, or more frequently than by the general laws of the female system, they ought to do. The discharge is menstruous, and does not coagulate, which distinguishes this state from uterine hemorrhage. Of the two varieties, we oftener meet with those who menstruate copiously, and for a longer time than usual, than with those who menstruate too often, for the generality of these do not menstruate, but have hemorrhage. Copious or prolonged menstruation is only to be considered as a disease, when it is not natural, that is, when it has not been habitual, and when it produces weakness. It may occur in those who are robust and plethoric, or in those who are relaxed and debilitated; but women of the latter description are oftener liable to hemorrhage, than this state of menstruation. If it is necessary to interfere, we must enforce that plan which prevents the vessels from being distended with blood, which lessens the determination to the uterus, and which rectifies the state of the constitution that predisposes to this excessive secretion. I need not be more particular, as I shall enter more into detail in the next section.

§ 5. MENORRHAGIA.

Hemorrhage takes place from the uterine vessels more frequently than from any other organ in the female system. It may occur in two very different states of the constitution; in a full, robust, and active habit, or in a weak and perhaps emaciated frame. In these

opposite states, the vessels of the womb may give way, in the one case, from over-action, or distention; in the other from debility. In the one there is generally a forcible circulation, but always a turgescence of the vessels; in the other, there is a languid motion, and not unfrequently from the same cause, the hemorrhoidal vessels swell, producing piles. Menorrhagia has therefore been divided into active and passive, to which some have added a third species, that dependant on spasm.

Uterine hemorrhage is always accompanied with marks of uterine irritation, such as pain in the back and about the pelvis, and is besides attended by constitutional or general symptoms, such as a febrile state in one case, and debility, with hysterical affections, in another. During the intervals of repeated menorrhagia, the health suffers more or less, according to the loss of blood, and in addition to this general effect, there is usually, especially in those of a debilitated frame, many dyspeptic affections, and very often leucorrhœal discharge. In process of time, visceral disease may be produced, or the patient becomes dropsical.

The causes giving rise to menorrhagia, may be divided into those which occasion the two predisposing states of plethora, and weakness of the vascular system, and those which act more immediately on the vessels of the uterus. Of the first kind, may be mentioned those which, on the one hand, increase the quantity of blood, as rich diet, indolence, &c. and on the other, debilitate the body, as fatigue, abstinence, profuse discharges, &c. Amongst the exciting causes, or those more particularly affecting the uterine vessels, may be mentioned, the excitement produced by excessive venery; irritation of the neighbouring organs; tenesmus, worms, torpor of the veins produced by costiveness, or dyspepsia; debility of the womb, occasioned by abortion, or laborious parturition. Menorrhagia may also be caused by irritation of the vessels communicated by the state of the uterus itself, and hence it very often attends prolapsus, some change of structure, or other organic disease, and therefore, in all cases of obstinate discharge, we ought carefully to examine the state of the womb, both as to position and structure.

Married women are more liable to menorrhagia than virgins, and

it is rare for these, if otherwise healthy, to have uterine hemorrhage.

The management during the attack, must depend on the state of the constitution, and the effect of the discharge. In full robust habits, when the pulse is firm, a febrile state exists, and the hemorrhage has not produced much debility, excellent effects may result, as in other active hemorrhages, from the early use of the lancet, by which the uterine discharge is speedily checked, and that before the vessels are so much weakened as to occasion a rapid return. But if the pulse be small or weak, and no febrile state exist, venesection is not to be proposed, nor can I conceive, that it is in any case useful, if delayed long. Whether the lancet is, or is not to be used, the succeeding part of the treatment is much the same. The patient, on a general principle, is to be kept from the very first in bed, that she may be in a recumbent posture. This I consider as of the utmost importance. Next, we are to moderate the action of the vascular system by cold, that is, we are to have the windows open, if in summer, and no fire if winter, and no more bed-clothes than are necessary to prevent shivering. The drink is to be sparing and cold. Sulphuric acid is to be given freely; and along with this, digitalis*(h)* may be prudently administered, so as to moderate the circulation. For the same purpose nauseating doses of emetic medicines have been employed, and sometimes with good effect. The diet is to be almost dry, and of the least nutritious quality. Wine and all stimulants are to be avoided. In order to restrain the action of the uterine vessels, cloths wet with cold water are to be applied to the vulva, or to the back and pubis. If these do not check the discharge, the vagina must be stuffed with a soft cloth, to retain the blood and promote coagulation.*(i)* Acetite of

(h) Digitalis must be used with great caution and discrimination in uterine hemorrhages. Where it has been injudiciously exhibited, it has been known to increase the flow; particularly where the inordinate discharge depends upon a topical relaxation of the vessels, which this medicine must necessarily tend to aggravate.

(i) This by the French physicians is termed *le tampon.* It is, perhaps, most readily effected, by taking a pretty large piece of soft cloth, dipping it in oil, and

lead has been given internally, or used as a clyster, with good effect; but it is nevertheless a hazardous remedy.

In debilitated habits, or in plethoric patients, when the discharge has been profuse, and produced much debility, the treatment must be modified. Immediate confinement to a horizontal posture, is, as in the former case, to be strictly enforced. Cold must be applied both generally and locally; but it cannot be carried so far as in active hemorrhage, nay, in extreme cases, where the vital powers are much depressed, and the extremities cold, it may be necessary to apply warm flannel to the feet and legs, or even to the body in general, to preserve the heat requisite for recovery. This is a matter not of choice, but necessity; and to the judgment of the practitioner it must be left, to avoid the evils arising from the stimulating effects of heat, and the depressing effects of cold. In this, much attention must be paid to the sensations of the patient. When the debility produced is not considerable, we are satisfied with a horizontal posture, avoiding the stimulating effects of heat, stuffing the vagina to promote coagulation, applying cloths wet with cold water to the external parts, and administering a dose of opium not less than two grains; and this is to be repeated if the debility be greater. I consider this as one of the best remedies we can employ, and when rejected from the stomach, it must be given in the form of clyster or suppository. The injection of solution of sulphate of alumin into the vagina is useful, and also safer than the use of vinous or spirituous injections, which have been proposed by some eminent men. The diet is to be sparing, the drink acidulated, and every exertion avoided.

If the debility be great, or the face pale, the lips blanched, the extremities cold, the pulse small, and the patient attacked with vomiting or syncope, the danger is not small; it is great in proportion to the extent of the weakness, and the obstinacy of the discharge. In such cases the patient must be carefully watched. The vagina

then wringing it gently. It is to be introduced by the finger, portion after portion, until the lower part of the vagina is well filled. The remainder is then to be pressed firmly on the orifice, and held there for some time.

is to be kept stuffed, or if the plug is removed, it is only for the purpose of injecting a strong solution of the sulphate of alumin. The strength is to be supported by liberal doses of opium; by jellies and soups; by the moderate and well-timed use of wine, either cold or warmed with spices; by external heat, so far as is necessary to prevent the body becoming cold; and by the use of aromatic cordials, such as aromatic spirit of ammonia, mixed with cinnamon water. The use of astringents, if the stomach can retain them, may be useful, such as the tincture of kino, as advised below.

The immediate violence of the attack, in either of the cases I have been considering, being over, the patient may remain for some time free from a return of the discharge, and then may have another severe attack, or she may have every day more or less hemorrhage. I must therefore next direct the attention to those means which are to be employed for the permanent cure of the patient. These must depend on the state of the constitution, and the nature of the exciting causes. In the robust or plethoric habit, we must lessen the quantity of blood, and diminish the force of the circulation, or the distention of the uterine vessels, by dry diet, of the least nourishing and stimulating kind; a large proportion of vegetables ought therefore to be taken at dinner, and both wine and malt liquor should be avoided. Regular exercise must be resorted to, in such a degree as shall prevent fulness, and strengthen the vessels, on the one hand, without going the length, on the other, of exciting the circulation, so much as to produce rupture. Purgative medicines are of much service, especially those which act also on the kidneys, such as sulphate of magnesia, or Cheltenham salts. These not only lessen the quantity of circulating fluids, but divert the current from the uterine vessels. This may be farther assisted by supertartrite of potash, ethereal spirit of nitre, and other mild diuretics. As an exception to the rule of employing laxatives, I must notice those cases where hemorrhage alternates with, or seems excited by, an irritable state of the bowels, and in such the use of opium is of signal benefit. The application of cold to the surface, especially if unequal, and to the lower extremities, is hurtful, by

determining to the internal parts. Heat, in a stimulant view, is to be avoided; but on the other hand, cold, by checking the perspiration, is hurtful. The sleep should be abridged, and taken on a hard bed, with not too much covering. The uterine vessels are to be strengthened by the daily use of the bidet, and injecting cold water into the vagina. Astringent injections are not proper, until the active state of the vessels be removed, after which they are of signal service, and should be used at least three times a day. Every exciting cause must be avoided. After the plethoric condition is obviated, the cold bath is excellent, conjoined with internal astringents.

In debilitated habits, whether the weakness have existed from the first, or have succeeded to plethora, the practice must be somewhat varied. Moderate laxatives, especially mineral waters, are proper to improve the tone of the bowels, and prevent languid circulation in the veins. Tonic medicines are to be given, such as different preparations of iron, chalybeate waters, such as that of Tunbridge, and bitters; of the last, the uva ursi, in doses of half a drachm, three times a day, is often of use; at the same time, to either of these medicines, may be added such doses of squills, as shall direct moderately to the kidneys. Some medicines taken into the stomach, appear really to have the property of constricting the vessels at a distance. The extract of rathania root, in doses of from half a drachm to a drachm, given two or three times a day, has been much extolled by M. Ruitz, but equal, if not more certain benefit, may be derived from the exhibition of a table-spoonful of tincture of kino three or four times a day. Much liquid is to be avoided, but the diet should be more nutritious than in the former case, and so much wine may be given as shall not stimulate the circulation, or produce heat or flushing. Claret is the most useful wine. Opiates at bed time are often of advantage, in preventing irritation. The cold bath is of great benefit; and by way of producing contraction of the uterine vessels, astringent injections should be frequently employed. In obstinate cases, a similar effect may be produced by ipecacuanha emetics. They rarely do harm, and have been known to check the discharge in very alarming situations. Friction on the surface of the body is useful, by deter-

mining to the extreme vessels. Every thing which can excite the uterine vessels must be avoided, such as dancing, long walks, venery, &c. If, in spite of these means, the hemorrhage still continue or return, there is reason to fear, that it is kept up by something more than the general condition, which I have been considering; for instance, by some organic affection of the uterus, not discoverable by the finger, perhaps as yet in an incipient state; by a diseased or varicose state of the vessels; or if the patient be young, by a scrophulous constitution, which does not readily yield to general remedies.

In constant stillicidium, unaccompanied with organic affection, the best remedies are tonics and astringent injections. This often stops spontaneously for two days before and after menstruation.

In weak habits, there is sometimes a slight discharge of blood for a day, at the end of a fortnight after menstruation. This is to be cured by strengthening means.*

* Hitherto, those uterine hemorrhagies which observe a periodical regularity in their recurrence, have been, very commonly, confounded with an increased flow of the menses. To this error we are, perhaps, to impute, in some degree, the uncertainty of our practice in these complaints. My own experience confirms the observation of Mr. Burns, "that all profuse discharges from the uterus are hemorrhagies." These are often to an extent to threaten immediate danger. Menorrhagia, on the contrary, even when most copious, is never alarming, except in its remoter consequences. The former complaints may be commonly checked, like other hemorrhagies, by the acetate of lead, by combinations of opium and ipecacuanha, by bleeding where the pulse is full and excited, &c. But the latter, as resulting from a natural secretory action of the uterus, will run on to the usual period of its termination, whatever may be done, unless the discharge be suppressed by some rash and violent interference. In *menorrhagia proper*, little else is required during the flow than rest, a cool room, some acidulated drink, as cremor tartar: to open the bowels, and occasionally, if there be pain or irritation, an anodyne. But, in the intervals of menstruation, we should endeavour by various means to make such an impression on the system as will restore to the uterus its healthy actions. The remedies, in these cases, are well known. Before dismissing this subject, it may, however, be useful to mention, that professor Hamilton, of Edinburgh, urges the most intrepid employment of opium in periodical hemorrhagies. He says, that he has given, in a case, as much as twelve grains of it in twenty-four hours with singular advantage. Though it is difficult with me to reconcile the efficacy of such doses of opium in hemorrhagy with the

CHAP. XIV.

Of the Cessation of the Menses.

About the period when the menses should cease, they become irregular, and sometimes are obstructed for two or three months, and then for a time return. This obstruction, like many other cases of retention and suppression of the menses, is accompanied with swelling of the belly, sickness, and loathing of food. These effects are frequently mistaken for pregnancy: for, as La Motte remarks, many women have such a dislike to age, that they would rather persuade themselves they are with child, than suppose they are feeling any of the consequences of growing old; and this persuasion they indulge, like Harvey's widow, *donec tandem, spes omnis in flatum et pinguedinem facesseret.* In this situation, the belly is soft and equally swelled, and enlarges more speedily after the obstruction, than it does in pregnancy. No motion is felt, or if it be, it is from wind in the bowels, and shifts its place. Exercise, chalybeates and laxatives, are the proper remedies in this case.

The period at which the menses cease, or "the time of life," is considered a critical, and, without doubt, it is an important epoch. If there be a tendency to any organic disease, it is greatly increased at this time, more especially if it exist in the uterus or mammæ; and, indeed, the cessation of the menses does of itself seem, in some cases, to excite cancer of the breast. Diseases of the liver, also, make greater progress at this period, or first appear soon after it. Dyspeptic affections are still more frequent. When there is no tendency to local disease, it is very common for women, after the menses cease, to become corpulent, and sometimes they enjoy better health than formerly.

From an idea of the cessation of menstruation being uniformly dangerous, some, by the use of emmenagogues, tried to prolong the

views I have adopted of the mode of operation of the medicine, yet from my faith in the judgment of Dr. Hamilton, I would, if necessary, not hesitate to make the experiment. C.

discharge, others, by issues, endeavoured to prevent bad effects. The first of these means is foolish and hurtful, the last is not necessary. When the health is good, no particular medicines are requisite; but if there be a tendency to any peculiar disease, then the appropriate remedies must be employed. The bowels must be kept open.(*k*)

CHAP. XV.

Of Conception.

Conception seems to depend upon the influence of the semen exerted on the ovaria, through the medium of the rest of the genital system; for women have conceived, when semen has been applied merely to the vulva, the hymen being entire.(*l*) The ovaria, even in the virgin state, produce or form ova, which, unless semen be applied, soon decay, and are absorbed. Sir E. Home* has lately called the attention of physiologists to this subject, and maintains that corpora lutea, so far from being an evidence of the female having been at a former time impregnated, do exist, and come forward in successive crops, in the virgin state. The corpus luteum is a mass, according to him, of thin convolutions, not unlike brain, of an oval shape, with a central cavity; and in some animals,

(*k*) For some interesting practical remarks on this subject, the student is referred to a paper by the justly celebrated Dr. J. Fothergill, "on the management proper at the cessation of the menses," in Medical Observations and Inquiries, Vol. V. Also in the Collection of his Works.

(*l*) A collection of cases of this kind will be found in a work entitled Speculations on Impregnation, by R. Couper, M. D. &c. They are, however, of doubtful accuracy. In all the cases of this kind which have been investigated by the Editor, it would appear that minute foramina have existed in the membrane called Hymen.

* Phil. Trans. 1819. p. 59. Blundell controverts this opinion of Home, in the 10th Vol. of Med. Chir. Trans.

when first exposed, of a bright yellow colour. If no semen be applied, the corpora, which are continually forming during all the breeding period of life, successively decay; but if impregnation take place, the ovum, excited by the semen, is carried to the uterus, by means of the fallopian tube, which at the time embraces firmly the ovarium, whilst the covering of the ovum gives way, either by absorption or rupture. Sir E. Home attributes it to rupture, and says some blood often escapes at the time it passes down into the uterus or vagina. Some also is effused into the cavity of the corpus luteum, formerly filled with the ovum. The coagulum becomes white, and then is absorbed, so that at the time of delivery no very distinct appearance of corpus luteum remains. In some cases the coagulum is absorbed, and the cup which it filled is left empty, with fringed edges. After delivery, distended corpora lutea, which have not been impregnated, are observable.

Sir E. Home thinks that the rupture of the coat of the corpus takes place during coition, that the semen may be directly applied to the ovum, but of this there is no proof; whilst, on the other hand, there is incontrovertible evidence that many women have conceived when the semen was emitted only at the vulva.*

* Amid the uncertainty which exists on the subject of generation, there seem to be some points very accurately ascertained. Thus, from the experiments of De Graaf on rabbits, we long since learned—

1. That the ovaries are the seat of conception. 2. That one or more of their vesicles become changed. 3. That the alteration consists in an enlargement of them, together with a loss of transparency in their contained fluid, and a change of it to an opaque and reddish hue. 4. That the number of vesicles thus altered, corresponds with the number of fœtuses, and from the former are formed the true ova. 5. That these changed vesicles, at a certain period after they have received the stimulus of the male, discharge a substance, which, being laid hold of by the fimbriated extremity of the fallopian tube, and conveyed into the uterus, soon assumes a visible vascular form, and is called an ovum. 6. That these rudiments of the new animal, which, for a time, manifested no arrangement of parts, afterwards begin to elaborate and evolve the different organs of which the new animal is composed. To these facts we may add, that the calyx, or capsule, which formed the parietes of the vesicles, thickens, by which the cavity is diminished. This cavity, together with the opening through which the fœtal rudiments escaped, becomes obliterated, and from the parietes of the vesicles having acquired a yellowish hue, they are called corpora lutea. Such was pretty nearly

It would appear, that although an ovum be impregnated, yet, by various causes, the process afterwards may be interrupted; the ovum shrivels and is absorbed. If there be an impervious state of the tubes, or any conformation or condition, rendering it impossible for a child to be supported, the ovum decays, and the woman is barren. Or if such a state be induced after impregnation, and before the ovum descends, the process stops.*

In the human subject, only one ovum is generally impregnated by one seminal application, but sometimes two or more may be

the extent of our information respecting this mysterious function, when the celebrated Mr. Haighton some few years ago engaged in an experimental investigation of the subject, and established, among others, the following additional points.

1. That the existence of the corpora lutea, as was previously alleged by De Graaf, is incontestible proof of impregnation having preceded.

2. That contrary to the opinions of most physiologists, neither the vesicle of the ovary is ruptured, nor the fallopian tube applied to the ovary during the act of coition; but, that several days elapse before the vesicle arrives at sufficient maturity to discharge its contents, till which time, the fallopian tube does not change its ordinary position.

3. That, in contradiction to the observation of De Graaf, Malpighi, and Cruikshank, the substance which passes from the ovary is merely a gelatinous fluid, which assumes nothing of the circumscribed vesicular character of the ovum till a considerable period after it is deposited in the uterus.

4. That the semen masculinum is applied to the ovary neither by the fallopian tubes, nor by absorption, nor in the form of aura seminalis.

He concludes, therefore, that fecundation is performed by that "law of the animal system termed sympathy, or consent of parts." The doctrine is thus stated:

The semen first stimulates the vagina, os uteri, cavity of the uterus, or all of them.

By sympathy the ovarian vesicles enlarge, project, and burst.

By sympathy the tubes incline to the ovaries, and having embraced them, convey the rudiments of the fœtus to the uterus.

By sympathy the uterus makes the necessary preparations for perfecting the formation and growth of the fœtus: and, finally,

By sympathy the breasts furnish milk for its support after birth. C.

* Dr. Haighton found, that by dividing the tubes after a rabbit was impregnated, the ova were destroyed. Or if only one tube was cut, and the female afterwards became impregnated, corpora lutea were found in both ovaria, but no ova were found in the tube or horn of the uterus, on the injured side. Phil. Trans. Vol. LXXXVII. p. 175, &c.

carried down into the uterus, and even after one ovum has reached the uterus, and grown to a certain degree within it, we find, that it is possible for a second to be excited into action, and brought down into the womb, where it is nourished and supported.*

Mr. Hunter† supposed that each ovarium is capable of producing only a certain number of ova; and that if one ovarium be removed or rendered useless, the constitution cannot give to the other the power of producing as many ova as could have been done by both.

It has been attempted to ascertain what age, and what season was most prolific. From an accurate register made by Dr. Bland, it would appear, that more women, between the age of twenty-six and thirty years, bear children, than at any other period. Of 2102 women, who bore children, 85 were from fifteen to twenty years of age; 578 from twenty-one to twenty-five; 699 from twenty-six to thirty; 407 from thirty-one to thirty-five; 291 from thirty-six to forty; 36 from forty-one to forty-five; and 6 from forty-six to forty-nine.

At Marseilles, M. Raymond says, women conceive most readily in autumn, and chiefly in October; next in summer, and lastly in winter and spring; the month of March having fewest conceptions. M. Morand again says, that July, May, June, and August, are the most frequent dates of conception; and November, March, April, and October, the least frequent in the order in which they are enumerated. I have been favoured with a register, for ten years, of an extensive parish in this place; from which it appears, that the greatest number, both of marriages and births, take place in May, and the fewest births in October. From this we would consider August and September to be most favourable to conception; but it is evident, that these conclusions are liable to great uncertainty.

Women are supposed to conceive most readily immediately after the menstrual evacuation, but it is doubtful how far this opinion is correct; and therefore, in calculating the time when labour should be expected, it is usual to count from a fortnight after the

* Vide Med. and Phys. Journ. Vol. XVII. p. 489.

† Vide Phil. Trans. Vol. LXXVII.

last appearance of the menses, or to say that the woman would be confined at the end of the forty-second week from that period.

The process of gestation usually requires forty weeks, or nine calender months for its completion; but many circumstances may render labour somewhat premature, and it is even possible for the process to be completed, and the child perfected to its usual size, a week or two sooner than the end of the ninth month. On the other hand, it is equally certain that some causes, which we cannot explain nor discover, have the power of retarding the process, the woman carrying the child longer than nine months;(*m*) and the child, when born, being not larger than the average size. How long it is possible for labour to be delayed beyond the usual time, cannot easily be ascertained; but it is very seldom protracted beyond a few days, counting the commencement of pregnancy from the day preceding that on which the menses ought to have appeared, had the woman not conceived.

CHAP. XVI.

Of the Gravid Uterus.

§ 1. SIZE AND POSITION.

When we compare the unimpregnated with the gravid uterus at the full time, we must be astonished at the change which has taken place during gestation, in its magnitude alone.

(*m*) The ancient laws of France allowed that a legitimate birth might take place ten months after the connexion of the sexes: in Scotland, the law considers a child born six months after the marriage of the mother, or ten months after the death of the father, as legitimate. The English law, which has been adopted in the United States, considers all children as legitimate, who are *born* in lawful matrimony, or within about forty weeks after the dissolution of the marriage by the death of the husband. It endeavours to avoid enquiring when, or by whom the child may have been begotten; the general rule being *presumitur pro legitimatione*.

In the ninth month the size of the womb is so much increased, that it extends almost to the ensiform cartilage of the sternum; and this augmentation it receives gradually, but not equally, in given times; for it is found to enlarge much faster in the latter, than in the earlier months of pregnancy. This is true, however, only with regard to the absolute increase, for in the first month, the uterus perhaps doubles its original size, but it does not go on in the same ratio. It is not twice as large in the ninth as in the eighth month.

In the second month the uterus is enlarged in every part without much change of shape. Towards the end of the third month, it generally measures from the mouth to the fundus above five inches, one of which belongs to the cervix. In the fourth month, it reaches a little higher, and measures five inches from the fundus to the beginning of the neck. In the fifth, it has become so much larger, as to render the belly tense, and may be felt, like a ball, extending to a middle point between the pubis and the navel, and measures about six inches from the cervix to the fundus. In other two months, it reaches to the navel, and measures about eight inches. In the eighth month, it ascends still higher, reaching to about half way between the navel and the sternum. In the ninth month, it reaches almost to the extremity of that bone, at least in a first pregnancy, when the tightness of the integuments prevents it from hanging so much forward as it afterwards does. At this time, it generally measures, from top to bottom, ten or twelve inches, and is oviform in its shape. For the first month, the shape of the uterus is not altered; it is enlarged in every direction. But after this, it swells before and behind, and soon becomes globular, having the cylindrical undistended cervix depending from it; after the fifth month it becomes more oblong, and by the seventh, it resembles a balloon. These calculations are not invariably exact, suiting every case, but admit of modifications.

In pregnancy, the mouth of the uterus is directed backward, whilst the fundus lies forward. This obliquity, however, does not take place until the uterus begins to rise out of the pelvis, and it always exists in a greater degree in those who have born many children.

From this position it appears, that the intestines can never be before the uterus, but must lie behind it and round its sides.

Previous to the descent of the ovum, the uterus begins to enlarge especially at its upper part, or fundus; and it is worthy of notice, that the posterior face of the uterus always distends more than the anterior one, as we ascertain by examining the situation of the orifices of the fallopian tubes.

When the fundus begins to increase, it not only grows heavier, but also presents a greater surface for pressure to the intestines above: it, therefore, will naturally descend lower in the pelvis, and thus project farther into the vagina. In this situation the uterus will remain, until it become so large as to rise out of the pelvis. This ascent takes place generally about the sixteenth week of pregnancy, if the pelvis be well formed, and the uterus increase in the usual ratio.

§ 2. DEVELOPMENT OF THE UTERUS, &c.

In the fifth month of pregnancy, the cervix begins to be developed: so that by the end of the month, one quarter of its length has become distended, and contributed to augment the uterine cavity; the other three-fourths, which remain projecting, become considerably softer, rather thicker, and more spongy. In another month, one half of the cervix is distended, and the rest is still more thickened, or the circumference of the projecting part greater: the uterus has also risen farther up, and the vagina is more elongated. In the seventh, we may, with the finger, distinguish the head of the child pressing on the lower part of the uterus, which we can seldom do before this. In the eighth month, the neck is completely effaced, and its orifice is as high as the brim of the pelvis. The ninth month affects the mouth of the uterus chiefly. The alterations of the cervix are discovered, by introducing the finger into the vagina, and estimating the distance betwixt the os uteri and the body of the uterus, which we feel expanding like a balloon.

The mouth of the uterus is merely the termination or extremity of the cervix, and consists of two lips of the same consistence with

the rest of the uterus. When the womb is not gravid, these are always open, and will admit the tip of the finger. But, soon after conception, the os uteri becomes closer, softer, and rather circular than transverse. In proportion as pregnancy advances, and the cervix stretches, the lips shorten, until they sometimes totally disappear; but more frequently they continue to project a little, until labour commences. All the inner surface of the cervix uteri, in the whole course of gestation, is full of glandular follicles, which secrete a thick viscid mucus. This extends from the one side to the other, and fills up the mouth of the uterus very perfectly, being thus interposed as a guard betwixt the membranes and any foreign body. By maceration, it may be extracted entire, when a mould of the lacunæ will be obtained by floating it in spirits, saturated with fine sugar.

§ 3. MUSCULAR FIBRES.

Vesalius describes three strata of muscular fibres, transverse, perpendicular, and oblique. Malpighi describes them as forming a kind of net work; whilst Ruysch maintains, that they appear at the fundus, in concentric planes, forming an orbicular muscle. Dr. Hunter paints them as transverse in the body of the uterus, but, at the fundus describing concentric circles around each of the fallopian tubes. These contradictions of anatomists serve to show, what may readily be seen by examining the uterus, that the fibres are not very regular and distinct in their course, but exhibit confusion, rather than any well marked figure.

The increased size of the uterus is by no means chiefly owing to the addition of muscular fibres. These become indeed larger, and better developed, but do not contribute so much to the increase, as the enlargement of the blood vessels, and perhaps the deposition of cellular substance. This gives the uterus a very spongy texture, and makes it so ductile, that a small aperture may be greatly dilated, without tearing. From examination, it appears, that although the whole uterus does not grow thinner in proportion to its increase, yet it does, at the full time, become thinner near

the mouth; whilst the fundus continues the same, or perhaps grows a little thicker, at least where the placenta is attached.

§ 4. LIGAMENTS.

No one, who understands the anatomy of the ligaments of the unimpregnated uterus, will be surprised to find a great change produced in their situation and direction, by pregnancy. The broad ligament, which is only an extension of the peritoneum from the sides of the uterus, is, in the ninth month, by the increase of the viscus, spread completely over its surface; and consequently, were we to search for this ligament, we would be disappointed. Its duplicatures are all separated and laid smoothly over the uterus. It will therefore be evident, that we can no longer find the ovaria and fallopian tubes floating loose in the pelvis, nor the round ligaments running out at an angle from the fundus uteri to the groin. All these are contained within duplicatures of the peritoneum, or ligamentum latum; and therefore, when this is spread over the uterus, it follows, that the ovaria, tubes, and round ligaments, cannot now run out loosely from the uterus, but must be laid flatter on its surface, and bound more by the stretched peritoneum. This description applies only to the state of the uterus at the full time. Earlier, we may readily observe the broad ligament flying out, and allowing the ovaria free play. The loose extremity of the tube becomes more expanded, and very vascular, and forms a kind of cavity called the antrum.

On the ovarium we observe a corpus luteum. This is a substance once described as divisible into cortical and medullary matter, placed immediately under the membrane of the ovarium, and adhering to the ovarium by cellular substance. It is of a yellowish colour, and is largest soon after conception. The nature of this has already been described.

§ 5. VESSELS.

The origin and distribution of the blood vessels of the uterus

have been formerly noticed; I have only to add, that, in pregnancy, they become prodigiously enlarged. Even before the ovum is very visible, we find the uterine artery as large as the barrel of a goose quill, and sending large branches round the cervix uteri, and up the sides of the womb. As pregnancy advances, the trunks, but especially the branches, become still larger, particularly near the implantation of the placenta. The veins are enlarged in the same proportion with the arteries. They are destitute of valves, and receive the name of sinuses.

The lymphatics are very large and very numerous. The nerves have already been described.

§ 6. OF THE FŒTUS.

Although many opportunities have occurred to anatomists, of examining not only abortions, but also the uterus itself, at an early period of gestation; yet it has not been exactly determined at what precise time the ovum enters the womb, or when the fœtus first becomes visible. This may depend, partly on want of information respecting the exact number of days which have intervened betwixt impregnation and our examination; and partly, perhaps, upon irregularities of the process in the human female, induced by various causes.

We know that considerable changes take place in the cavity of the uterus, before the ovum descends; but the time required for the accomplishment of these is not determined. In a very accurate dissection performed by the late Mr. Hunter, and related by Mr. Ogle,* no ovum could be found either in the uterus or the tubes, although there is reason to suppose that nearly a month had elapsed from the time of impregnation. I have examined very carefully three uteri within the first month, and have not been able to discover either ovum or fœtus. If we admit analogical evidence on this subject, we shall be more confirmed in a belief that the ovum does not, in the human female, enter the uterus, until at least three weeks after conception.†

* Transactions of a Society, &c. Vol. II. Art. vi.

† Dr. Combe possessed a preparation, where there was an appearance of a very

In the rabbit, whose period of gestation is only thirty days, the ovum is not to be found in the uterus earlier than the fourth day, according to Mr. Cruikshanks,* or the sixth, according to Dr. Haighton; and the fœtus is not visible till the eighth day, when it may be seen by dropping vinegar on the ovum.† Haller found, that, in the sheep, whose term of gestation is five months, the ovum does not enter the uterus till the seventeenth day,‡ and the fœtus is not visible till the nineteenth. These observations and conclusions would appear to be overturned by a recent observation of Sir E. Home,§ who, after soaking the uterus in spirits, detected an ovum within it, when he supposed that only eight days had intervened between impregnation and death. The cavity of the uterus was lined with decidua; and the plate corresponds most exactly to the appearance I have seen in three different cases I have just alluded to, and where I believe the period to be more advanced. In these, I could detect no ovum; but Sir E. Home, by the use of spirits, rendered it more distinct, and found it entangled in the fibres of the decidua, near the cervix uteri. It had an oval shape; one part was quite white, the other transparent; but, soon after, being exposed to the spirits, the white became opaque. Mr. Bauer examined it by the microscope, and found it to resemble very much a little shell of the genus voluta, the membrane being open, like a shell, along one side; another smaller membrane seemed to be contained within, filled with a thick slimy substance, and enveloping two small corpuscles of a yellowish tint, supposed to be the brain and heart. The inner membrane formed an oval $\frac{18}{200}$ of an inch long, and not quite $\frac{5}{200}$ broad. The whole ovum was $\frac{19}{200}$ long, and $\frac{9}{200}$ broad; that is, it was nearly about the size of a canary seed. The os uteri was shut up with solid jelly.

minute fœtus. From peculiar circumstances, two and twenty days were supposed to have elapsed from the time of conception. Vide Dr. Hunter's Anatom. Descrip. p. 87.

* Phil. Trans. Vol. LXXXVII.

† Phil. Trans. Vol. LXXXVII. p. 204.

‡ Elementa, Tom. VIII. p. 59.—Opera Minora, Tom. II. p. 434.

§ Phil. Trans. 1817. Part 2d.

The ovum, at first, contains no embryo visible to the naked eye; nothing but vesicular involucra appear. This point is fully established by examining the inferior animals, and is especially confirmed by the incubation of the eggs of fowls. I have examined carefully a most perfect ovum in the ninth week after menstruation, consequently not less than the fifth after conception. In it no distinctly organized embryo could be detected. The chorion was as large as a small chesnut, covered with shaggy vessels, and filled with transparent jelly, like the vitreous humour of the eye. Within, and adhering to one side, was the amnion, not much larger than a coriander seed. It contained nothing but transparent fluid; but I did not try the effect of rendering the contents opaque by spirits.

When the human fœtus is first distinctly visible through the membranes, it is not above a line in length, and of an oblong figure. In the sixth week, it is seen slightly curved, resembling as it floats in the water, a split pea. In the seventh week, it is equal in size to a small bee; and, by the conclusion of the second month, it is bent, and as long as a kidney bean.

The embryo, at first, appears to the naked eye like two oval bodies of unequal size, united together by a neck. The one of these is the head, the other the trunk. The head is a membranous bag, which is large in proportion to the body; but after the first month of its growth, the relative size decreases: on opening it, nothing but a soft pulp is found within. In a little time, the face appears, the most prominent features of which are the eyes; these are proportionally larger in the embryo than in the advanced fœtus, and are placed low down. The face itself is small, compared to the cranium. The nose does not appear until the end of the second month, but somewhat sooner, we may observe two apertures in the situation of the nostrils. The mouth, at first, is a round hole, but by degrees lips appear; and after the third month, they are closed, but do not cohere. The external ear is not formed at once, but in parts, and is not completed before the fifth month; even then, it differs in its shape from the ear after birth. It is at first like a gently depressed circle.

The extremities early appear like the buds of a plant. The arms are directed obliquely forward, toward the face, and are lar-

ger than the inferior extremities. The genitals, for a time, are scarcely to be observed; but in the third month, they are large in proportion to the body.

The fœtus does not grow in a uniform ratio, but, as has been observed by the learned anatomist, Dr. Soemmering,(o) the increment is quicker in the third than in the second month. In the beginning of the fourth it becomes slower, and continues so until the middle of that month, when it is again accelerated. In the sixth month, it is once more retarded, and the progression remains slow during the rest of gestation.

The proportion between the weight of the fœtus and its involucra, is reversed at the beginning and the end of gestation. When the embryo does not weigh more than a scruple, the membranes are as large as a small egg. Even when the fœtus is not larger than a fly, the membranes resemble, in shape and size, a large chesnut. On the other hand, at the full time, when the fœtus weighs seven pounds, the placenta and membranes do not weigh a pound and a half, and the proportion of liquor amnii is greatly lessened. In the twelfth week, the fœtus weighs nearly two ounces, and measures, when stretched out, about three inches. The membranes are larger than a goose's egg, and weigh, if we include the liquor amnii, several ounces. In the fourth month, the fœtus is about five inches long. In the fifth month, it measures six or seven inches. In the sixth month, the fœtus is perfect and well formed, measures eight or nine inches, and weighs about one pound troy; whilst the placenta and membranes weigh about half a pound, exclusive of the liquor amnii. The fœtus is now so vigorous in its action, that there have been instances, though most rare, of its continuing to live, if born at so premature a period. In the

(o) The student is particularly requested, where that most valuable work is within his reach, to compare this description of the fœtus in its different stages of progressive development and growth, with the most accurate and elegant plates of Soemmering, entitled, Icones Embryonum Humanorum. Dr. Hunter's plates of the gravid uterus, are also highly worthy of inspection. These invaluable works may be almost said to supply the place of anatomical preparations; so closely and minutely has nature been copied by the faithful pencil and graver of the artist.

seventh month, it has gained about three inches in length, and is now more able to live independent of the uterus; though even at this time, the chance of its surviving six hours from birth is much against it. In the eighth month, it measures about fifteen inches, and weighs four, or sometimes five pounds, whilst the involucra weighs scarcely one. These calculations vary according to the sex of the child, and also the conformation of the parents. Male children generally weigh more than females. Dr. Rœderer* concludes, from his examinations, that the average length of a male, at the full time, is twenty inches and a third; whilst that of a female is nineteen inches and seventeen eighteenths. Dr. Joseph Clarke has given a table of the comparative weight of male and female children at the full time, from which it appears, that although the greatest proportion of both sexes weigh seven pounds, yet there are more females than males found below, and more males than females above, that standard. Thus, whilst out of sixty males, and sixty females, thirty-two of the former, and twenty-five of the latter, weighed seven pounds; there were fourteen females, but only six males, who weighed six pounds. On the other hand, there were sixteen males, but only eight females, who weighed eight pounds. Taking the average weight of both sexes, it will be found, that twelve males are as heavy as thirteen females. The placenta of a male weighs, at an average, one pound two ounces and a half, whilst that of a female weighs half an ounce less. Female children, who, at the full time, weigh under five pounds, rarely live; and few males, who even weigh five pounds, thrive. They are generally feeble in their actions, and die in a short time.

When there are two children in utero, the weight of each individual is generally less than that of the fœtus who has no companion; but their united weight is greater. When a woman has twins, it either usually happens, that both children are small, or one is of a moderate size, and the other is diminutive; though I have known instances, where both the children were rather above, than under the usual standard. The average weight of twelve twins, examined by Dr. Clarke, was eleven pounds the pair, or

* Comment. Gottin. 1753.

five and a half each. Twins require more pabulum from the mother, and a greater degree of action in the uterus; for two placentæ must have their functions supported. The uterus is also generally more distended, and produces greater irritation; it has more blood circulating in it; and the weight of its contents, to that with a single child, has been stated as twenty to fifteen. Twin gestation often produces a greater effect on the system, making the women more disposed to disease, and less able to bear it: hence the chance of recovery has been supposed to be four times less in them, than in those who have single children. The children being generally feebler than when only one is contained in the uterus, are more disposed to disease; and, as the mother is less able to suckle children after a twin labour, many perish, who might have been preserved, by providing a good and careful nurse, soon after birth, for the weakest child.

When the number of children increases above two, the aggregate weight does not increase. Thus Dr. Hull of Manchester met with a delivery of five children, who did not weigh two pounds and a quarter; they measured from eight to nine inches in length, and two of them were born alive.

Calculations have been made of the proportion of single births, to those where there were a plurality of children. In the Dublin hospital, one woman in fifty-eight had twins. In the British lying-in hospital, one in ninety-one. In the Westminster hospital, one in eighty. In my own practice, about one in ninety-five.*(p)* In the Dublin hospital, triplets have not occurred above once in five

(*p*) In the lying-in hospital, called l'Hospice de la Maternité, at Paris, about one in eighty-nine had twins, as appears from Baudelocque's Tableau des Accouchemens.

In the lying-in ward of the Philadelphia alms-house, as appears from a regular record kept for 19 years, ending 1815, one woman in about 52 had twins. The proportion of males to females, born within the above period, was about 10 males to 8 females.

A different average, particularly as it regards the proportion of twin cases, was stated in the former edition of this work, but that was taken from the result of five years only, in which twin cases had very rarely occurred.

thousand and fifty times.(q) More than three are not met with, once in twenty thousand times.

The proportion of male children, born in single births, is greater than of females. In an extensive parish in this place, the number of males born in a given time, was to that of females, as 3716 to 3177. In the Westminster hospital, it was as 972 to 951; but in the same hospital, it is worthy of remark, that the number of male twins was only 16, whilst that of females was 30.(r)

§ 7. PECULIARITIES OF THE FŒTUS.

The fœtus has many peculiarities which distinguish it from the adult, and which are lost after birth, or gradually removed during gestation. In particular, the liver is of great size, by which the abdomen is rendered more prominent than the thorax. It appears very early, and increases rapidly till the fourth month, after which its growth is slower. In the child, after birth, the greatest quantity of blood in the liver is venous, and from this the bile seems to be secreted. But in the fœtus, the blood is more nearly approaching in its nature to arterial; and no bile, but a fluid different in its properties, is secreted. The gall bladder is filled with a green fluid, which, before birth, becomes darker, with a tinge of blue, but is said not to have a bitter taste. The umbilical vein, which contains blood, changed in the placenta, enters the liver, and sends large branches to the left side; the vena portæ enters the liver, and ramifies on the right side; whilst a branch, or canal of communication, is sent from the umbilical vein to the vena portæ. By this contrivance, the left side is supplied altogether with pure blood from the placenta, and the right side is supplied with a mixture of pure and impure blood, which does not form perfect bile. After birth, as the circulation from the placenta is stopped, the branches of the umbilical vein, which supplied the left side, would be empty, did not the canal, which formerly served to carry a por-

(q) In l'Hospice de la Maternité at Paris, triplets occurred but twice in 12,605 women.

(r) Of 12,751 infants born in the lying-in hospital at Paris, above alluded to, 6,524 were males, and 6,227 females.

tion of blood from this vein to the vena portæ, now permit this latter vessel to fill the branches in the left side, which henceforth form a part of the vena portæ. The whole liver is thus supplied with blood entirely venous. Bile is formed, and sometimes in very considerable quantity.

The blood of the fœtus differs from that of the adult. It forms a less solid coagulum, for in place of fibrous matter, it yields a soft tissue, almost gelatinous. It is not rendered florid by exposure to air,* and it contains no phosphoric salt. But soon after the fœtus has respired, the colouring matter, exposed to oxygen, acquires the vermilion tint; and salts are formed, particularly the phosphate of lime.

The stomach is smaller in the fœtus, than in the child after birth. The intestines, which at first are seen like threads arising from the stomach, are redder, and said to be longer in proportion to the body in the fœtus, than in the child. They are at first uncovered, but, after some time, the abdominal muscles and integuments form a complete inclosure. They contain a soft substance like ointment, of a dark green colour, called meconium.

The testicles of the male, and the ovaria of the female, lie on the psoæ muscles; but, before birth, the testicles pass into the scrotum. The kidneys are large and lobulated, and the ureters thick. The glandulæ renales are large, and contain a reddish fluid. The bladder is more conical and lengthened than in the adult. The lungs are dense and firm, and a large gland, called thymus, is contained in the thorax. The heart is very different from its adult state. In the chick, we find that there is in the situation of the heart, a single cavity which afterwards corresponds to the left ventricle. At the forty-sixth hour the ventricle and bulb of the aorta are visible. Then an auricle is formed by the vena cava: this auricle does not adhere directly to the ventricle, until the sixth day, but is connected with it till that time by a short duct, called canalis auricularis. In about ninety-six hours the auricle begins to exhibit marks of a division into two cavities, or a right and left side, and some time afterwards, the right ventricle and lungs are evolved. The struc-

* Bichat made experiments to ascertain this upon Guinea pigs, and always found the fœtal blood black. Anatomie Generale, Tome II. p. 343.

ture of the heart, however, is still different from that which obtains after birth; for though the auricles are divided into two cavities, yet these are seen, in the human fœtus, to communicate freely by a vacancy in the septum; and even after this is supplied, it is only with a valve, which allows the blood to pass from the right to the left side. This is the foramen ovale, which is shut up after birth. Another peculiarity of the fœtal heart is, that the pulmonary artery, although it divide into two branches for the lungs, yet sends a third, and still larger branch, directly into the aorta just at its curvature, and this is the ductus arteriosus. The blood is received in a purified state from the placenta, by the umbilical vein, which, after giving off branches in the liver, sends forward the continuation of the trunk, to terminate in the vena cava, or largest of the hepatic veins, and this continuation is named ductus venosus. The mixed blood which is thus found in the vena cava, is carried to the right auricle, and thence to the corresponding ventricle. By the pulmonary artery it ought to be conveyed to the lungs, but this would be useless in the fœtus, and therefore the greatest part of it passes on by the ductus arteriosus to the aorta. But it follows from this, that as little blood is carried to the lungs, so little can be brought from them by the pulmonary veins to the left auricle. Now, to obviate this, and fill that auricle at the same time with the right, the foramen ovale is formed; and thus, as the blood can pass freely from the right to the left, the two auricles are to be considered as one cavity, being filled and emptied at the same time.

The aorta is distributed to the different parts of the body; but this singularity prevails, that the hypogastric vessels run up all the way to the navel, and pass out to form the umbilical arteries. After birth, these arteries are obliterated in their course to the navel; and the foramen ovale, and ductus arteriosus become impervious.

The head of the fœtus is, at first, membranous, and the brain a pulp, soluble in aqua kali puri. By degrees, distinct cartilaginous plates are formed over the brain, which are gradually converted into bones. These, at birth, are only united by intermediate membranes.

The pupil of the eye, till the seventh month, is shut up by a membrane; and the eyelids, for some months, adhere together.

The skin is covered with a white substance, which, though unctious to the feel, does not melt, but dries and crackles by heat. It is miscible with spirits, or with water, through the medium of soap or of oil.

The male fœtus differs from the female, in having the head larger, but less rounded, and flatter at the back part. The thorax is longer, and more prominent, and formed of stronger ribs than in the female. In her, it is wider from the upper part to the fourth rib, and narrower below; the belly, also, in the female, is more prominent, and the symphysis pubis projects more. The upper extremities are shorter than those in the male; the thighs are thicker at the top, and more tapering to the knees. Dr. Soemmering says, that the spinous processes of the lower dorsal, and upper lumbar vertebræ, make in the male an eminence like a yoke, in the female a sinuosity. I may remark, that as the clitoris is large in the young fœtus, females sometimes pass in abortions for males.

When in utero, the fœtus assumes that posture which occupies least room. The trunk is bent a little forward, the chin is pushed down on the breast, the knees are drawn up close to the belly, and the legs are laid along the back part of the thighs, with the feet crossing each other. The arms are thrown into the vacant space betwixt the head and knees. This is the general position, and the child thus forms an oval figure, of which the head makes one end, and the breech the other. One side of it is formed by the spine and back part of the head and neck, and the other by the face and contracted extremities. The long axis of this ellipse measures, at the full time, about ten inches, and the short one, five or six. In the eighth month, the long axis measures about eight inches. In the sixth, betwixt four and five. In the fourth month, it measures nearly three inches and a half; and in the third, about an inch less.

In the early months, however, there is no regular oval formed, and these measurements are taken from the head to the breech, which afterwards forms the ends of the distinct ellipse. The extremities are at first small and slender, and bend loosely toward the trunk.

§ 8. UMBILICAL CORD.

The umbilical cord is an essential part of the ovum, connecting the fœtus to its involucra. It is found in oviparous and viviparous animals, and also in plants; but in these different classes, it appears with many modifications. In the human subject, it consists of three vessels; of which two are arteries, and one is a vein. These are imbedded in gluten, and covered with a double membranous coat. The two arteries are continuations of the arteriæ hypogastricæ of the child, and passing out at the navel, run in distinct and unconnected trunks, until they reach the placenta, where they ramify and dip down into its substance. When they reach the placenta, the one artery, in some cases, sends across a branch to communicate with the other. The vein commences in the substance of the placenta, forms numerous rays on its surface, corresponding to the branches of the arteries; and near the spot where the arteries begin to give off branches, these rays unite into a single trunk, the area of which is rather more than that of the two arteries. None of these vessels are furnished with valves.

The umbilical vessels run in a spiral direction, within the covering of the cord, and the twist is generally from right to left. Besides this twisting, we also find, that the vessels, especially the arteries, form very frequently coils, loosely lodged in the gluten.

The cord does not consist entirely of vessels, but partly of a tenacious transparent gluten, which is contained in a cellular structure; and these numerous cells, together with the vessels, are covered with a sheath, formed by the reflection of both chorion and amnion from the placenta; and of necessity the amnion forms the outer coat of the cord. The chorion adheres firmly to the cord every where, but the amnion does not adhere to the chorion; it is not even in contact with it at the placental extremity, but forms there a slight expansion, which, from its shape, has been called by Albinus, the processus infundibuliformis.

The proportion of gluten is larger in the early than in the advanced stage of gestation; and the vessels, at first, run through it in straight lines. In some instances, the cells distend or augment

in number, so as to form tumours on the cord, which hang from it like a dog's ear.

There is a small sac, or bladder, found on the placenta, at or near the extremity of the cord, in the early part of gestation. It is most distinct betwixt the third and fourth month of pregnancy, and is placed exterior to the amnion. It is filled, though not quite distended, with a whitish fluid, on which account it is called the vesicula alba.* From this a very fine vessel proceeds along the cord, adhering firmly to the amnion; but, without a glass, it cannot be traced all the way to the navel. It has been supposed to be subservient to the nourishment of the fœtus in its early stage. A small artery and vein pass along the cord from the navel, to the vesicle which is between the chorion and amnion. These are the omphalo-mesenteric vessels.

Besides the blood vessels, there is in brutes another vessel, which is a continuation of the fundus vesicæ. It passes out at the navel, and, running along the cord, terminates in a bag, which is placed betwixt the chorion and amnion. The bag is called the allantois, and the duct the urachus. In the human subject, in place of the urachus, we find only a small white impervious cord. There is of course no allantois.

When the ovum is first visible in the uterus, there is no cord, the embryo adhering directly to the involucra, but it soon recedes; and about the sixth week, a cord of communication is perceptible.

The cord at the full time varies in length, from six inches† to four feet;‡ but its usual length is two feet. When it is too long, it is often twisted round the neck or body of the child, or occasionally has knots formed on it,§ most frequently, perhaps, by the child passing through a coil of it during labour.‖

* Vide Albinus, Annot. Acad. lib. I. cap. xix. p. 74, et tab. I. fig. 12.

† Hildanus, cent. II. obs. 50.

‡ Mauriceau has seen it a Paris ell and a third, obs. 401.—Hebenstreit 40 inches.—Haller Disp. Anat. Tom. V. p. 675.—Wrisberg 48 inches.—Vide Com. Gotting. Tom. IV. p. 60.

§ Vide Mauriceau, obs. 133. and 156.

‖ Dr. Hunter thinks he has twice seen these formed previous to birth.

The vessels of the cord sometimes become varicose, and form very considerable tumours. These, occasionally, so far impede the circulation, as to interfere with the growth of the child, or even to destroy it altogether. Sometimes the vessels burst, and blood is poured into the uterus, which produces a feeling of distention, and excites pain. There can, however, be no certainty of this accident having taken place until the membranes burst, when clots of blood are discharged. If the fœtal and maternal vessels should communicate, the mother is weakened, and may even faint; and, in every instance, the child suffers, but does not always die.* Delivery must be resorted to, either on account of the effects produced on the mother, or to prevent the destruction of the child.

The cord may, by a fall, or violent concussion of the body, be torn at a very early period of gestation. In this case, the child dies, but is not always immediately expelled. It may be retained for several weeks; afterwards the ovum is thrown off, like a confused mass, inclosing a fœtus, corresponding in size to the period when the accident happened.† The cord may be filled with hydatids.

The cord has been found unusually small and delicate, or, on the contrary, very thick. In the latter case, it is always proper to apply two ligatures, instead of one, on the portion which remains attached to the child.‡ It has happened, that by the shrinking of the cord under the ligature, the child has died from hemorrhage.§

Two cords have been met with, connected with one placenta, or with two placentæ belonging to one child. In other instances, the vessels are supernumerary or deficient. Stories have been told of the cord being altogether wanting, but these are incompatible with the fœtal economy.

* Vide Baudelocque l'Art, note to section 1084.

† Vide Case by M. Anel, in Mem. of Acad. of Sciences, 1714.

‡ This was proposed by Mauriceau, in consequence of meeting with an instance, where the child suffered much from loss of blood, obs. 256.

§ Vide Case by M. Degland, in Recueil Period. Tome V. p. 343.

§ 9. PLACENTA.

A placenta, or something equivalent to it, is to be found connected with the young of every living creature.

We find it requisite that a pabulum should be supplied to every animal, and that certain changes should be performed on the blood, qualifying it for supporting life. In oviparous animals, two different parts of the ovum perform these separate functions. The umbilical vessels of the chick ramify on the membrane of the albumen, and thus come in contact with the air, which is absorbed through the pores of the shell; and, by this contrivance, changes analagous to those effected by respiration, are produced on the blood. From the inner surface of the membrane of the vitellus, a nourishing fluid is absorbed, which is conveyed to the intestine by a proper duct; and, before the chick is hatched, the remainder of this fluid, inclosed in the membrane of the vitellus, is taken within the abdomen, and covered with the abdominal integuments.*

* In the eggs of fowls, we observe the following circumstances. 1st. Upon removing the porous shell, we find the albumen inclosed in a membrane, consisting of two layers, and called sacciform by Leviellé. These are separated from each other at the large end of the shell, so as to form a small sac, called the folliculus aeris. The albumen is divided into three strata; the first, or cortical, is most liquid; the second or middle, is more abundant, and thicker than the first, but less so than the third or central. The middle and central strata are inclosed in a delicate membrane, called leucilyme by Leviellé, which separates them from the cortical. 2d. Within the albumen we have the vitellus or yolk, which is inclosed in a vascular membrane, called chlorilyme, or membrana vitelli, which again is enveloped by a membrane common to it and the intestines of the chick, called entro-chlorilyme. 3d. To each end of the vitellus, we have connected a portion of the central albumen, called chalaza; and in each of these a membranous substance is discovered, attached to the membrane of the vitellus, and a vascular structure, which can absorb the albumen into the vitellus, to contribute to the nutrition of the chick. 4th. Upon the vitellus, we observe the cicatricula, or small sac, called by Harvey the eye of the egg, and which was supposed to contain the fœtus, the rudiments of which are allowed by Malpighi, Haller, and Spallanzani, to be pre-existent to fecundation. This cicatricula was considered as analogous to the amnion, and supposed to contain a transparent fluid, called by Harvey colliquamentum candidum, or liquor amnii. More modern observations

In many quadrupeds we find, that, after impregnation, certain portions of the inner surface of the uterus enlarge, and form pro-

ascertain that the embryo is not formed in the cicatricula, but very near it on the vitellus, and that the amnion inclosing it can at first scarcely be distinguished from the embryo. The cicatricula soon disappears. Harvey's account must therefore be transferred to the amnion. 5th. During incubation, the vitellus becomes specifically lighter than the albumen; and rises toward the folliculus aeris. Two arteries and two veins go from the meseraic and hypogastric vessels of the fœtus, to the membrane of the yolk, and are supposed to absorb the vitellus, which therefore is carried to the vena portæ of the chick, and nourishes the fœtus. There is also a connection betwixt the intestines and vitelline membrane, by means of a ligamentous substance, which was supposed by Haller and Vicq. D'Azyr to be a tube, and called vitello-intestinal canal, for it is said that air has been passed through it. It was supposed to absorb the yolk, by many villi on the inner surface of the vitelline membrane; but these are said by Leviellé not to be vessels, but soft lamellated plates. At the end of the second day, red blood is observed on the membrana vitelli. A series of dots are formed, which are converted first into grooves, and then into vessels, which go to the fœtus. This appearance has been called figura venosa, and the marginal vessel vena terminalis. 6th. The vitello-intestinal ligament, and these vessels, form an umbilical cord. But besides these, we find, after the fourth day, a vascular membrane at the umbilicus, called membrana umbilicalis, which rapidly increases, and comes presently to cover the inner surface of the membrane of the shell. It is the chorion, and has numerous vessels ramifying on it, like the chorion of the sow, and connected in like manner with the fœtus. The blood of the umbilical artery is dark-coloured, that of the vein bright. 7th. As incubation advances, the amnion enlarges, and comes in contact every where with the chorion. The albumen is all consumed, being taken into the vitellus, which is in a great measure absorbed; and what remains is taken, together with the sac, into the abdomen of the chick, and the parietes close over it. On the 21st day, the chick breaks the shell and escapes. By increasing or diminishing the temperature within a certain extent, the process may be somewhat accelerated or retarded. The eggs of large birds require a longer time to be hatched; those of the ostrich, for example, take six weeks.

Hence it appears, that the vitellus and albumen contribute to the increment of the fœtus, whilst the exterior membranes act as lungs, the air being transmitted through the pores of the shell.

The eggs of fishes have a general resemblance to those of fowls, and consist of a vitellus and albumen, with their membranes; but in place of being furnished with a shell, they have a tough, or sometimes a horny covering; and some, as those of the shark, torpedo, &c. are quadrangular in shape. The yolk is connected to the intestines of the fœtus, and its membrane is very vascular. As in fowls, so, in fishes, it is ultimately inclosed within the abdomen of the young. In the skate, numerous blood vessels are formed in the albumen, which supply the place

tuberances, having many hollows or foramina, from which a milky fluid can be squeezed. From the chorion, corresponding vascular

of gills, and are supposed by Dr. Monro, to be afterwards covered and converted into gills. The two functions of a placenta, then, are still more distinctly fulfilled here than even in fowls, for the apparatus for nutrition and respiration has different or distinct terminations; whereas in fowls and quadrupeds, all the vessels enter at one place. A similar fact is observed in the ova of frogs, for the umbilical cord in the tadpole goes to the head.

The egg of the serpent is nearly the same with that of the fish, and is inclosed in a flexible membrane. The fœtus is coiled up spirally within it, and the chorion is vascular, as in the egg of the fowl.

The adder is a viviparous animal; its uterus is membranous, and divided, I find, into eight or nine cells, each of which, in September, contains an ovum as large as a chesnut. This consists of an exterior membrane, which incloses a fœtus about six inches long, and coiled up. About an inch from the tail, the umbilical cord passes out, which consists of vessels that go to ramify on the exterior membrane, which resembles the chorion of the sow. There is also a connection with a vitellus, which is as large as a hazel nut.

The coluber natrix is said, by Valmont-Bomare, to have a placenta and cord within the egg, but this is contrary to the general structure of eggs; most likely the chorion has been taken for the placenta. The eggs of reptiles are often deposited in packets, the eggs being glued together.

The egg of the turtle is as large as a hen's, and is inclosed in a covering like parchment. It is deposited in the sand, and is hatched in about 24 days. The egg of the alligator is similar in structure to that of the turtle: it is rather larger than a goose's egg, and covered with a thin skin, so transparent, however, that the fœtus may be seen through it.

Those animals which are called oviparous, hatch their eggs out of the body, either by sitting on them, as we see in fowls, or by exposing them to the heat of the sun, as the turtle, crocodile, and many serpents. Oviparous fishes, which comprehend all those called osseous, expel their ova into the water, where they are fecundated by the male, but without copulation. Many fishes leave the sea, and come up the rivers to spawn. Others remain in the ocean; and the eggs, specifically lighter than the water, float on the surface. Many fishes attach them to marine plants, and in some cases the ova are fixed to the body of the parent. The ova are covered with a kind of mucus, which has been supposed to defend them from the water.

The ova of frogs, &c. are likewise fecundated and hatched out of the body. They are enveloped in a glairy matter, which perhaps contributes to their increase; for during incubation, the egg both enlarges and changes its shape.

Those animals which hatch their eggs within the body, are called ovo-viviparous, such as cartilaginous fishes, as the shark, skate, and torpedo, &c. The scorpion and venemous serpents also belong to this class. Ovo-viviparous animals expel the young fully formed, and therefore have been sometimes considered as

efflorescences arise, which shoot into these apertures; and thus an union is effected betwixt the mother and fœtus.

having uteri like quadrupeds, and a cord attached directly to it. Spallanzani at first supposed that the fœtus of the torpedo was attached directly to the uterus, but afterwards found that it was contained in a distinct ovum. Experiences, p. 294. See also Cuvier Leçons d'Anat. Comparée, Tom. V. p. 142. The shark is said to have an uterus like the bitch, and Belon says he saw a female delivered of eleven young attached by a cord. Its mode of gestation most likely is similar to the torpedo. This class expel their young often very quickly. A female syngnatus hyppocampus was observed to expel at least a hundred in a very short time.

Analogous to ovo-viviparous animals, are those which receive the ova into cells on the surface of the body, where they are hatched. This is well seen in the pipa, a species of toad. Even the tadpoles, are said to be metamorphosed in these cells. The opossum tribe has a modification of this gestation; for in them the fœtus, when very small, is expelled into a bag situated on the belly, and immediately attaches itself to a nipple. The utero-gestation of the opossum of North America lasts only from 20 to 26 days, and the embryo, when expelled, does not exceed a grain. It remains in the sac about 50 days, and acquires the size of a mouse. In other animals, as for instance the bat, the young, after birth, attach themselves to the nipple, partly for the convenience of being transported or carried about.

In plants we find likewise a placenta or structure, intended for the nourishment and respiration of the fœtus. To take the kidney bean for an example, we find within the membranous covering two parenchymatous lobes, or cotyledons; and at the margin betwixt these, there is the corculum or cicatricula. During incubation, we find that this sends up a small shoot called the plumula, and down a radical into the earth. But to support the plant until the root and leaves are capable of maintaining it, we find the cotyledons rise up out of the earth, on each side of the plumula, forming what are called seed leaves. These both serve for the respiratory organs, and also supply pabulum, which is absorbed by proper vessels, and in consequence thereof they presently are destroyed. When there are more lobes than two in the seed, there are a corresponding number of seed leaves. In many cases these cotyledons do not rise out of the ground, but the plumula alone appears. This is the case with the garden pea, but the cotyledons still perform their functions below the ground, and exist until the foliage of the plant, or adult organs, be formed. The greatest part, then, of a vegetable seed or ovum, consists, like the eggs of fowls, of an apparatus intended for the nutriment and respiration of the fœtus, whilst the embryo itself is very small. The cotyledon consists, in many cases, of a farinaceous substance. In other seeds it is oily and farinaceous, and in some is almost all oily.

Vegetable ova sometimes are contained in a dry pericarpium, and are shed into the earth when it bursts. But others have an apparatus provided, not only for their present growth, but also for accelerating their incubation in the earth. In

In the sow and the mare there is no projection from the uterus, but its surface is every where smooth and vascular. There is no efflorescence from the chorion, but it has numerous vessels disposed over it, which are the extremities of the umbilical arteries and veins. In these animals, then, we have no distinct placenta, the chorion alone serving that purpose.

The cetaceæ have uteri like quadrupeds, but I am unacquainted with the precise mode of connection betwixt the mother and the fœtus.

The monkey differs from other quadrupeds, in having no permanent papillæ; but the maternal part of the placenta is deciduous, like that of women.

In the human subject, the placenta is a flat circular substance about a span in diameter, and, when uninjected, an inch in thickness. It becomes gradually thinner from the centre to the circumference, by which it ends less abruptly in the membranes. Its common shape is circular; but it is sometimes oblong, or divided into different portions.

The umbilical cord may be fixed into any part of the placenta, or sometimes into the membranes, at a distance from the placenta. When this happens, the vessels run in distinct branches to the placenta, without forming any spongy substance on the membranes. Most frequently, however, the cord is inserted at a point about half way between the centre and the circumference of the placenta. From this the umbilical vessels spread out, like a fan, ramifying

stone fruit and nuts, we find that vessels pierce the shell at the bottom, and pass on toward the top, and reach the kernel or lobes, which are contained within the shell, enveloped in a soft membrane. They are inserted very near the embryo. Now, for the farther support of these parts, we find that stone fruits are covered with a quantity of nutritious matter. The almond, for example, has its ligneous nut covered with a fleshy substance about an inch thick, inclosed in a proper membrane. The rhamnus lotus has the stone surrounded with farinaceous matter, which tastes like gingerbread. Other seeds are contained in a parenchymatous or succulent substance, as the apple or pear; or in a firm white substance, like cream or marrow, or in a mucilaginous matter as the gooseberry, or in an organized pulp as the orange and garcinia mangostona. Some are deposited in a luscious fluid at first, which ultimately becomes farinaceous, as the plaintain.

over the surface, and dipping their extremities into the substance of the placenta itself.

That surface of the placenta which is attached to the uterus, is divided into lobes, with slight sulci between them, and is covered with a layer of the decidua like clotted blood. On the surface which is next the child, we see the eminent branches of the umbilical vessels, over which we find spread the chorion and amnion.

If we inject from the umbilical vessels of the human fœtus, we find that the placenta is rendered turgid, and vessels are to be found filled in every part of it; but always between their ramifications there remains an uninjected substance; even the uterine surface of the placenta is not injected, for the fœtal vessels do not pass all the way to that surface.

If we inject from the uterine arteries, we, in like manner, render the placenta turgid, but nothing passes into the umbilical vessels; and when we cut into the placenta, we find cells full of injection, and covered with a fibrous uninjected matter. Hence we may infer that the placenta consists uniformly of two portions. The one is furnished by the deciduous coat of the uterus, the other by the vessels of the chorion; and these two portions may, during the first three months, be separated, by maceration, from each other.

The structure of the fœtal portion, so far as we know, appears to be similar to that of the pulmonary vessels, the artery terminating in the vein. But the other portion is somewhat different; there is not a direct anastomosis, but the artery opens into a cell, and the vein begins from this cell; for, by throwing in wax by the uterine artery, we may frequently inject the veins. These cells communicate freely with each other in every part of the placenta, and may be compared to the corpora cavernosa penis.

From the general principles of physiology, as well as from experiments on the chick in ovo, and from the fatal effects which instantly follow compression of the cord whilst the child is in utero, it is allowable to infer, that the placenta serves to produce a change on the blood of the fœtus, analagous to that which the blood of the adult undergoes in the lungs; and from considering, that the fœtus itself cannot create materials for its own growth and support,

we may farther infer, that the placenta is the source of nutrition also.

The placenta may be formed at any part of the uterus, but, in general, it is found attached near the fundus.

Its structure is sometimes changed, part of it being ossified or indurated, or on the contrary, unusually soft. These changes may produce either hemorrhage, or retention of the placenta. Hydatids may form in the placenta; or fleshy tumours may grow in its substance. In neither of these cases does the child necessarily die.

§ 10. MEMBRANES AND LIQUOR AMNII.

The ovum when it descends into the uterus, consists of two membranes, one within the other, having very transparent jelly interposed between them. But in process of time the innermost, which is called the amnion, grows so much faster than the outermost, called the chorion, that it comes in contact with it, or at least has only a thin layer of jelly interposed.

The amnion is thin, pellucid, and totally without the appearance of either vessels or regular fibres; yet, in the end of pregnancy, it is stronger than the chorion and its vascular covering: it lines the chorion, covers the placenta, and mounts up on the naval string, affording a coat to it all the way to the umbilicus, where it terminates.

The sac, formed by the amnion, is filled with a fluid, which appears to be composed chiefly of water, with a very little earth, albumen, and saline matter. As this water is contained within the amnion, it has received the name of liquor amnii. In this sac the fœtus lies.

The quantity of water, upon an average, which is contained within the amnion, at the full time, is about two English pints; but sometimes it is much more, and at other times scarcely six ounces. In the early periods, the quantity is larger, in proportion to the size of the uterus, than afterwards.

The chorion, like the amnion, is thin and transparent, adheres firmly to the placenta, and covers all the vessels which run on its

surface; but it does not dip down with them into the substance of the placenta. The ovum, when it first descends, or at least very soon afterwards, has the chorion every where covered with vessels, which sprout out from it. These form a covering to it, which, from its appearance has been called the shaggy or spongy chorion.

§ 11. DECIDUA.

The last coat to be described, is one yielded entirely by the uterus, and serves to connect the uterus with the fœtal vessels of the chorion. This, as Harvey observes, is not a covering of the fœtus, but a lining of the uterus, which falls off after delivery; and therefore it is called the caducous coat, or the membrana decidua.

The illustrious Haller supposed, that this was formed by naked vessels shooting out from the uterus. Dr. Hunter imagined that the arteries of the uterus poured out coagulable lymph, which was afterwards changed into decidua. His brother, Mr. John Hunter, attributed its origin to coagulated blood, which formed a pulpy substance on the inner surface of the uterus.

Having been so fortunate as to meet with three or four opportunities of investigating the state of the uterus, within a month after conception, I shall describe what appears to me to be the structure of the decidua. Very speedily after impregnation, and always before the embryo enters into the womb, its size is increased, its fibres are softer and more separated from each other, and its vessels very much enlarged. On cutting it up, its cavity is found to be considerably broader and longer, and somewhat wider than in the unimpregnated state; and all the fundus and body have their surface covered with a dense coat, which adheres firmly to the uterus. If the vessels have been injected, this evidently is seen to consist of two different substances, namely, vessels, and a firm tough gelatine. It seldom happens that all the vessels can be equally filled, and therefore some spots are redder than others. The vessels do not pass on to the surface of this coat, but are seen

shining through it. They proceed directly from the surface of the womb, and project at right angles to the plane which yields them; they are intermixed with a little gelatine, and consist of both arteries and veins. Over their extremities is spread a layer of gelatinous matter, which very early is observed to contain fibres, forming a kind of net-work. Thus the decidua consists of two layers, one highly vascular, proceeding directly from the uterus; the other, which is most probably formed by these vessels, is more fibrous and gelatinous; and when this is removed, the primary vessels, or outer layer, may be seen like a fine efflorescence, covering the surface of the uterus. In some cases the decidua extends a little into the fallopian tubes; in other instances it does not. In no case does the cervix form decidua. It is only produced by the fundus and body of the womb; and immediately above the cervix, the decidua stretches across, so as to form a circumscribed bag within the uterus. In some instances, however, I have observed this continuation to be wanting, although the parts were opened with care. In all other circumstances, these uteri resembled those where the decidua was continued across; but, perhaps, notwithstanding this, there may have been a difference of two or three days in the period of impregnation, occasioning this variation. In every case, the decidua, consisting thus of two layers, is completely formed before the ovum descends.

When the embryo passes down through the tube, it is stopped, when it reaches the uterus, by the inner layer, which goes across the aperture of the tube, and thus would be prevented from falling into the cavity of the uterus, even were it quite loose and unattached. By the growth of the embryo, and the enlargement of the membranes, this layer is distended, and made to encroach upon the cavity of the uterus, or, more correctly speaking, it grows with the ovum. This distention or growth gradually increases, until at last the whole of the cavity of the uterus is filled up, and the protruded portion of the inner layer of the decidua comes in contact with that portion of itself which remains attached to the outer layer. We find then, that the inner layer is turned down and covers the chorion; from which circumstances, it has been

called the reflected decidua.(s) In Sir E. Home's case, he says, the tubes were quite pervious, that is, no decidua was stretched across them, and the ovum lay at the cervix uteri. In such a case, the ovum instead of growing downwards would grow upwards, and carry still a reflected cast of decidua with it.

Thus we see, that whenever the ovum descends, it is encircled by a vascular covering from the uterus, which unites, in every point, with those shaggy vessels which sprouted from the chorion, and which made what was called the spongy chorion. One part of these vessels forms placenta, and the rest gradually disappear, leaving the chorion covered by the decidua reflexa. This obliteration begins first at the under part of the chorion.

CHAP. XVII.

Of Sterility.

Sterility depends either on malformation, or imperfect action of the organs of generation. In some instances the ovaria are wanting, or too small; or the tubes are imperforated; or the uterus very small. In these cases the menses generally do not appear, the breasts are flat, the external organs small, or they partake of the male structure, and the sexual desire is inconsiderable.

In a great majority of instances, however, the organs of genera-

(s) By others it is thus explained, viz. That after the cavity of the uterus is completely lined with the secreted decidua, the ovum passes into it from the fallopian tube, and in passing along its parietes, involves and covers itself completely over every point of its surface with a coat of the decidua, which at that period may be compared to a coat of white paint; as the ovum increases in size, the decidua immediately covering it, (called decidua reflexa) ultimately comes into intimate contact with that portion of the decidua, which continues to line the cavity of the uterus, and forms apparently but one membrane.

tion seem to be well formed, but their action is imperfect or disordered. The menses are either obstructed or sparing, or they are profuse or too frequent, and the causes of these morbid conditions have been already noticed.

It is extremely rare for a woman to conceive, who does not menstruate regularly; and, on the contrary, correct menstruation generally indicates a capability of impregnation on the part of the woman.

A state of weakness and exhaustion of the uterine system, occasioned by frequent and promiscuous intercourse with the other sex, is another very common cause of barrenness in women, and hence few prostitutes conceive.

A morbid state of the uterus and ovaria, often accompanied with fluor albus, may likewise be ranked amongst the causes of sterility, and this is known by its proper characters.

Women who are very corpulent, are often barren, for their corpulence either depends upon want of activity of the ovaria, spayed, or castrated animals generally becoming fat, or it exists as a mark of weakness of the system.

When sterility depends upon organic disease, we have it seldom in our power to remove it; but when there is no mark of the existence of such a state, and we have ground to suppose that it is occasioned by debility, or imperfect action of the uterine system, we are to employ such means as are supposed capable of removing this, either by operating on it along with the general system of the body, or more directly on the uterus itself. Our first attention must be directed to menstruation, as the state of that function is our principal directory in the choice of the class of medicines to be employed. On this subject I must refer to what has been said in chap. xii. We will also, altogether independently of the state of menstruation, naturally consider the condition of the constitution and habit of body, with regard to plethora, irritability, torpor, or debility, and use varied and persevering means for rectifying those states; always, however, taking care that we do not injure the constitution in seeking for a remote good. In the majority of cases, weakness of uterine action is the cause, and the remedies are sea-bathing and tonics, in various forms; general stimulants, such as

Bath waters, mercury, essential oils, nitrous acid, &c. when medicines of this description are not contraindicated by the state of menstruation; local stimulants, which act more directly on the uterus or its vicinity, as the semicupium, cantharides, balsam of copaiba, &c. Of all these, the first class is the safest, and the most frequently useful. The ancients employed medicated pessaries, which have long fallen into disrepute, rather, perhaps, from the absurdity of their ingredients, than from any argument respecting the inefficacy of gentle stimulants acting on the vagina and womb.

A temporary separation from the husband is of service, especially when the menses are profuse, and, in most cases, frequent intercourse should be avoided.

Should a woman, who has been for some years barren, conceive, she must be very careful during gestation, for abortion is readily excited.

In some cases, the uterine system is capable of being acted on by the semen of one person, but not of another.

CHAP. XVIII.

Of Extra-uterine Pregnancy.

§ 1. SYMPTOMS, PROGRESS, AND SPECIES.

It sometimes happens that the ovum does not pass down into the womb, but is retained in the ovarium, or stops in the tube, or is deposited among the bowels. Of all these species of extra-uterine pregnancy, the tubal is the most frequent.

The symptoms of extra-uterine pregnancy are not, at first, very definite; but generally, the usual sympathetic effects of pregnancy, or the diseases of gestation, are more distressing than if the fœtus

were contained in utero, nor do they cease so early. In some cases, they even increase in violence, as pregnancy advances.*

The symptoms, though often more violent, are, however, similar in kind to those of common pregnancy. The belly swells, the uterus itself enlarges, and may be felt to be heavy; but after some time, it does not correspond in its size, and in the state of its cervix, to the supposed period of gestation, or may return to the unimpregnated size.† The menses are often obstructed, though in some cases they have continued to appear for two or three months. The breasts enlarge, the morning sickness takes place about the usual period,‡ and the child quickens at the proper time, but it is felt chiefly upon one side. An obstruction to the free passage of urine is sometimes produced till the sac rise out of the pelvis.

Occasionally in the early stage of pregnancy, pains§ resembling those of colic, are felt, and these are often so severe as to excite syncope,‖ or convulsions ;¶ and it has happened, that during these pains, the tube or ovarium has burst, and the person died, owing

* Vide Paper by Dr. Garthshore, Lond. Med. Journ. Vol. VIII. p. 344.

† Vide Mr. Tucker's case, Med. and Phys. Journ. xxix. 448.

‡ In Dr. Clark's case the morning sickness, and other signs of pregnancy, appeared very regularly. At the end of nine months, attempts were made to expel the fœtus. These were followed by inflammation and decline of health. Then suppuration took place, and the patient sunk. Transactions of a Society, &c. Vol. II. p. 1. In Mr. Mainwaring's case, in the same work, p. 287, the patient suffered much from morning sickness, and pain at the groins.

§ In the Journal de Scavans for 1756, we are told of a woman at Louvain, who at first had so dreadful pain when she went to stool, that she thought her bowels were coming out.—In Pouteau's case the woman suffered great pain till after the second month. Melanges, p. 333.

‖ Bianchi mentions a case, in which, in the first months, the woman complained of great pain in the lower belly, with nausea, and fainting fits. The motion of the child ceased in the fifth month, and then milk was secreted. De Nat. in Hum. Corp. Vitioso Morbosoque Gener. p. 166.—In Dr. Mounsey's case, the pain, vomiting, and fainting fits, continued till the woman quickened. Phil. Trans. Vol. XLV. p. 131.—In Dr. Fern's case, the person complained of great pain till the third month; and from that period till the eighth month, was subject to convulsions and syncope. Phil. Trans. Vol. XXI. p. 121.

¶ Vide Dr. Fern's case, and a case by Mr. Jacob, in Lond. Med. Jour. Vol. VIII. p. 147.

to the internal hemorrhage.* When these pains either do not occur, or are removed, or the patient survives the rupture of the sac, we generally find, that at the end of eight, nine, or ten months from the commencement of gestation, appearances of labour† take place; the woman suffers much from pain, and there may be a sanguineous discharge from the uterus. The pains go off more or less gradually,‡ the motion of the child ceases, and milk is secreted.§ In a few instances, very little farther inconvenience is felt, the tumour of the belly remaining for many years, and the child being converted into a substance resembling the *gras des cimetieres*, whilst the sac which contains it becomes indurated. More frequently, however, considerable irritation is produced,|| with nausea, loss of appetite, frequent vomiting, chills, difficulty of breathing, and great debility; inflammatory symptoms supervene, and hectic takes place. The sac adheres to the peritoneum, or intestines; and after an uncertain period, varying from a few weeks or months to several years, it either opens externally, or communi-

* In Mr. Langstaff's case, the patient felt violent pains in the lower belly, sickness, and faintness, and died in seven hours after being taken ill. Two quarts of blood were found effused into the pelvis, and abdomen, and a fœtus, with its membranes, was found, apparently about eight weeks old. The right fallopian tube was as large as a hen's egg, and had burst in two places. The uterus was very vascular, and contained jelly, but it is said had no decidua; and the cervix was not shut up by mucus. The tube was obliterated at the uterine extremity, which probably was the cause of the evil. Med. Chir. Trans. Vol. VII. p. 437. Sabatier mentions two instances of ovarian pregnancy, where the patient died quickly after pain and fainting. Med. Operat. Tom. I. p. 343.

† In Dr. Perfect's case, no labour pains came on, but the motion of the child ceased at the end of nine months. The abdomen neither increased nor diminished in size for two years and seven weeks; but she was afflicted with constant pain in the hypogastric region, attended with fever, and finally sunk under marasmus. Cases in Midwifery, Vol. II. p. 164.

‡ In Mr. Bell's case, the pains continued, though gradually abating, for three weeks. Med. Comment. Vol. II. p. 72.

§ In Mr. Bell's case, milk continued to be secreted for several years. In Mr. Turnbull's case, a fluid was secreted, rather like pus than milk.

|| In the case of a female mulatto, the outlines of which I was favoured with by Dr. Chisholm, the pain was so great that it could not be allayed by the strongest opiates. It ended fatally.

cates with the abdominal viscera. Very fœtid matter, together with putrid flesh, bones, and coagula, are discharged through the abdominal integuments,* or by the rectum,† vagina,‡ or bladder.§ Sometimes, even an entire fœtus has been brought away from the umbilicus,|| or by the rectum.¶ It is worthy of notice, that the

* This termination is noticed so long ago as by Albucasis, lib. II. c. 76. In the Paduan Commentaries, there is related a case, where the abdominal parietes opened by gangrene, which is also said to have affected the uterus, and the child was then expelled, and the patient recovered.

† Vide cases by Langius, in his Epistolæ, Tom. II. p. 670. Tulpius, Opera, lib. IV. c. 39. p. 358.—Pouteau in his Melanges, p. 373.—Mr. Shiever, in Phil. Trans. No. 303. p. 172.—Winthrop. Phil. Trans. Vol. XLIII. p. 304. and Simon, p. 529. —Lindestaple, Vol. XLIV. p. 617. Morley, Vol. XIX. p. 486. Gordon, in Med. Comment. Vol. XVIII. p. 323. Cammel, in Lond. Med. Jour. Vol. V. p. 96. Case by M. Bergeret, in the Recueil Periodique, Tom. XIV. p. 289.

‡ Vide Marcel. Donatus, De Med. Hist. Mirab. lib. IV. c. 22.—Horstii Opera, Tom. II. p. 536. In this case, the fœtus was discharged both by the vagina and rectum.—Benevoli, in his Dissert. p. 104, gives an instance where the greater part of the child was expelled by the vagina, but the woman died before the process was completed.—Mr. Smith's case in Med. Comment. Vol. V. p. 314.—In Mr. Colman's case, pains came on, and the head was felt in the pelvis at the time of her reckoning, and long afterwards, but the os uteri could not be perceived. In some time, hectic fever, with diarrhœa and sore mouth, appeared. Six months after her attempts at labour, an opening was felt in the vagina, but very unlike the os uteri. The hand was introduced, and a putrid child was extracted. Some fæces continued to come by the wound, but at last she got well. Med. and Phys. Jour. Vol. II. p. 262.—See also Camper's case, in his Demonst. Anat. Path. lib. II. p. 16. and Dr. Fothergill's case, in Mem. of Med. Society, Vol. VI. p. 107.

§ Vide Stalpart Van der Wiel, Opera, Tom. I. p. 305. In this case, bones came away with the urine.—In the case of Ronseus, the child was discharged partly by the bladder, but chiefly by the anus. Epist. Med.—A similar instance is related by Morlanne, the extraneous matter forming a nucleus for a calculus. By an operation similar to that of lithotomy, two stones and five portions of cranial bones were extracted. Recueil Period. Tom. XIII. p. 70.—In Prof. Josephi's case, the child was found altogether in the bladder. Med. and Phys. Jour. Vol. XIV. p. 519.

|| Vide case of Mrs. Stag, in Lond. Med. Obs. and Inquiries, Vol. II. p. 369; and cases by Mr. Jocob, Dr. Maclarty, and others.

¶ In Mr. Gifford's case, the child was expelled entire by the anus, and even the cord was found hanging out of the intestine. Phil. Trans. Vol. XXXVI. p. 435.—See also Mr. Goodsir's case, in Annals of Medicine, Vol. VII. p. 412.—Dr. Albers has a similar case.

placenta, in this process, always is ultimately destroyed,* and discharged among the putrid fluid. Often time is not allowed for this process to be accomplished, but the person dies at an early period.

Thus it appears, that there are different terminations of the extra-uterine pregnancy. The sac may burst, and the person die speedily of hemorrhage;† or the child may escape into the abdomen, and be enclosed in a kind of cyst of lymph;‡ or the sac may remain entire, the child being retained many years,§ and the parts become hard; notwithstanding this, the menses may return, and

* In Dr. M'Knight's case, although the cæsarean operation was performed before any bad effects were produced on the health, no part of the placenta could be found.

† In Dr. Clark's case, the tube burst in the second month, and the woman died from loss of blood. Transactions of a Society, Vol. I. p. 216.—Vide case by Duverney, in his works, Tom. II. p. 353. and by M. Littre in the Memoirs of the Acad. of Sciences, for 1702, and by Riolan, in his works. See also Med. Comment. Vol. I. p. 429.—In Mr. T. Blizard's case, rupture took place at a very early period, for the woman had miscarried only five weeks previous to this event. Vide Edin. Phil. Trans. Vol. V. p. 189.—Mr. Tucker's case, Med. and Phys. Journal, XXIX. 448.

‡ Vide a case by La Croix, in La Med. Eclarée, Tome IV. p. 349.

§ I have known the fœtus retained for twenty years, and there are some instances, where it has been retained for thirty, forty, or fifty years. Mrs. Ruff, whose case is related in the Med. and Phys. Jour. for May 1800, carried the child fifty years. Middleton's patient carried it sixteen years. Phil. Trans. Vol. XLIV. p. 617. Mounsey's thirteen years, Vol. XLV. p. 121. Steigertahl's forty-six years, Vol. XXXI. p. 126. Broomfield's nine years, Vol. XLI. p. 696. Sir P. Skippon's patient discharged it by suppuration at the groin, after retaining it twenty years, Vol. XXIV. p. 2070. See also cases by M. Grivel, in Edin. Med. Jour. Vol. II. p. 19, and Dr. Caldwell, p. 22. Sometimes no attempt is made to expel, but the fœtus is converted into a substance, which Fourcroy finds to resemble the gras des cimetieres. System, Tom. X. p. 83. Sandifort relates a case, where, after attempts at labour, no further inconvenience was sustained, but the child was found after twenty-two years to be indurated. Observationes, lib. II. p. 36. He quotes Nebel for a case, where it was retained fifty-four years. Cheselden found it converted into earthy matter. The late Mr. Hamilton of this place had a preparation of a fœtus, covered with calcareous matter, which was retained 32 years. This woman had pains at the end of nine months, after which the belly decreased in size.

the woman conceive again.* But the most frequent termination is that of inflammation ending in abscess, attended with fever and pain, under which the patient either sinks, or the fœtus is expelled in pieces, and the cure is slowly accomplished. From a review of cases it appears, that a majority ultimately recover, or get the better of the immediate injury: of the rest, some have sunk speedily, either from hemorrhage or inflammation, or exhaustion produced by ineffectual attempts to expel the child; or more slowly from hectic fever; or in consequence of some other disease being called into action, by the violence which the constitution has sustained.

In some cases the sac soon rises quite out of the pelvis. In others, it remains longer, and falls down between the rectum and vagina, forming a tumour, accompanied with symptoms of retroversion of the uterus.† In such cases, the sac inflames, and bursts into the rectum or vagina. Dr. Merriman‡ is of opinion, that all these cases are instances of retroverted uterus, and not of extra-uterine pregnancy; but, for the present, this must rest entirely on

* In the 5th Vol. of the Edin. Med. Essays, there is related a case in which the patient seemed to have a second extra-uterine pregnancy before she got quit of the first.—See also Primrose de Morb. Mul. p. 326.—Mr. Hope, in the 6th Vol. of the Med. and Phys. Jour. p. 360, details a case, where the woman in the seventh month of pregnancy had pains, which continued for three weeks, and then went off, leaving a hard tumour on the left side, which was somewhat painful; she then had another pregnancy, and a fortnight after delivery, began, after taking a laxative, to vomit, and continued to do so, ultimately throwing up feculent matter. The case ended fatally.—See also, Turk, in Haller, Disp. Chir. IV. 793.

† Vide Mr. Mainwaring's case, in Trans. of a Society, &c. Vol. II. p. 287. In Mr. White's case, related in Med. Comment. Vol. XX. p. 254, the symptoms were very like those of retroversion, and the case was only distinguished by the result. In Mr. Cammel's case, there was not only a tumour betwixt the vagina and rectum, but the os uteri was turned upward and forward. Lond. Med. Jour. Vol. V. p. 96. Mr. Kelson's case very much resembled retroversion, for in the tenth week both the urine and stools were obstructed. In about a fortnight, the impediment was suddenly removed, and the uterus felt in situ. She continued well to the ninth month, when labour ineffectually came on; but in process of time the child was discharged by the anus. Med. and Phys. Jour. Vol. XI. p. 293.

‡ Vide Dissert. on Retroversion, &c. 1810.

supposition. The mere circumstance of the pregnancy being complicated with suppression of urine, or tumour at the back part of the pelvis, is no proof; as both of these may arise from the pressure of the sac on the pelvis.

Sometimes, when parturient efforts are made, the head descends into the pelvis, though it was not there before; but either no os uteri can be felt, or it is felt directed to the pubis, and it is not affected by the pains.(*t*)

It is curious to observe, that generally the uterus enlarges somewhat,* and, in most instances, I imagine, decidua† is formed. In a remarkable case, related by the ingenious Mr. Hay,‡ of Leeds, the placenta was formed in the uterus, while the fœtus lay in the tube.

Tubal pregnancy sometimes does not proceed farther than the second month, the tube bursting at that time; or, to speak more correctly, I believe the tube slowly inflames, and sloughing takes place. In many instances, however, the tube goes on enlarging for nine months, and acquires a size nearly equal to that of the

(*t*) It is very probable that some of these cases have in reality originated from retroversions of the uterus, which, as Merriman has proved, may even continue partially in that state until the full period of utero-gestation. This subject shall be more fully explained, when retroversion of the uterus comes to be treated of. In the meantime the student is referred to a review of Dr. Merriman's Work, in the Eclectic Repertory, Vol. I. p. 338.

* Bœhmer long ago observed this; and Dr. Baillie, in the 79th Vol. of the Phil. Trans. mentions, that Dr. Hunter had a preparation of tubal pregnancy, in which the uterus was found enlarged to double its natural size, and containing decidua. He also states, that in an ovarian case, the uterus was enlarged, thick, and spongy, and its vessels enlarged. Dr. Clarke found the uterus, in the second month of an extra-uterine pregnancy, exactly of the same size as if the embryo had been lodged within it. The decidua was formed, and the cervix filled with gelatinous matter. Transactions of a Society, Vol. I. p. 216. See also a case by Saviard, in Phil. Trans. No. 222. p. 314. A case similar to Dr. Clarke's is related by Mr. T. Blizard, in the Edin. Phil. Trans. Vol. V. p. 189. See also Annals of Med. Vol. III. p. 379.

† In Mr. Houston's case, the cervix was so closed up that it would not admit a probe. Phil. Trans. Vol. XXXII. p. 387. The decidua would appear sometimes to enlarge, and form a mass like placenta, which in Mr. Turnbull's case was expelled with hemorrhage. Mem. of Med. Society, Vol. III. p. 176.

‡ Vide Med. Obs. and Inq. Vol. III. p. 341.

gravid uterus, at the same stage of gestation.* The placenta differs from a uterine placenta in being much thinner and more extended. External examination discovers little difference, at the full time, between this and common pregnancy.

Ovarian† is much more rare than tubal pregnancy, and it is seldom that the ovarium acquires a great size. It either bursts early‡, or inflammation and abscess take place; or the fœtus dies, and is converted into a confused mass; or it excites dropsy of the ovarium.§ The ovarian pregnancy, until inflammation has taken place, produces a circumscribed moveable tumour, like dropsy of the ovarium.

In ventral pregnancy, the most rare of the three species, the motions of the child are felt more freely, and its shape is readily distinguished through the abdominal integuments. The expulsive efforts come on as usual, and the head of the child is sometimes forced into the pelvis. It dies, and the usual process for its removal is carried on, if the woman do not sink immediately under the irritation. The placenta is found attached to the mesentery or in-

* Among many other cases in proof of this, I may refer to one very accurately detailed by Dr. Clarke, in Trans. of a Society, &c. Vol. II. p. 1.

† In a case related by Varocquier, the ovarium did not acquire a larger size than an egg. The woman died, after suffering violent pain in the left side, low down. The viscera were slightly inflamed. Mem. de l'Acad. de Sciences, Tom. CXIII. p. 76. In the case by L'Eveillé, the fœtus was apparently betwixt three and four months old. Rapport de la Societé Philomatique, Tom. I. p. 146. See also a case in the Recueil Period. Tom. XIII. p. 63; and in the Recueil des Actes de la Societé de Lyon.

‡ Vide Chambon, Malad. de la Grossesse, Tom. II. p. 373. Case by St. Maurice, in Phil. Trans. No. 150, p. 285. In the case related by La Rocque, the ovarium was found ruptured, and the abdomen full of blood. Journ. de Med. 1683. Bœhmer found the ovarium ruptured, and the fœtus half expelled. Obs. Anat. fasc. prim. Dr. Forrester's patient, after violent colic pains, voided blood by the anus. The hemorrhage and fainting fits proved fatal. The fœtus was found in the ovarium. Annals of Medicine, Vol. III. p. 379.

§ Vide Rœderer, Elemens, c. 15. § 758. In Mr. Dumas's case, a fluid like chocolate was drawn off by tapping, which was twice performed. The ovarium contained hair, bones, &c. La Med. Eclairée, Tom. IV. p. 65. Mr. Bell's tubal case excited ascites.

testines.* It has been supposed, that the examples of this variety are all in reality instances of ruptured uteri; but this is not supported by satisfactory proof. At the same time, I have no doubt that many of them are.

§ 2. TREATMENT.

In the treatment of extra-uterine pregnancy, much must depend on the circumstances of the case. In the early stage, if the sac be lodged in the pelvis, we must procure stools, and have the bladder regularly emptied, as in cases of retroverted uterus. Attacks of pain, during the enlargement of the tube, require blood-letting and anodynes, laxatives, and fomentations. The same remedies are indicated when convulsions take place. Ovarian requires a similar management with tubal pregnancy, except that if it be complicated with dropsy, relief may be obtained by tapping.

When expulsive efforts are made, and the head is felt through the vagina, and the nature of the case distinctly ascertained, it may be supposed, and some recorded cases would seem to justify the supposition, that much suffering may be avoided, by making an incision through the vagina, and delivering the child; but, as yet, experience has not fully ascertained the utility of this practice. †

* Vide Dr. Kelly's case, in Med. Obs. and Inquiries, Vol. III. p. 44. In Mr. Clarke's case, the placenta was attached to the kidneys and intestines, Mem. of Med. Society, Vol. III. p. 179. In the Mem. of the Acad. of Sciences, there is a case related, where the placenta adhered to the lumbar vertebræ. In the history by La Coste, it was placed under the stomach and colon. Vide Œuvres de Duverney, Tom. II. p. 363. In Mr. Turnbull's case, it was very thin, and adhered to the intestines. Mem. of Med. Society, Vol. III. p. 176. A case of ventral pregnancy, complicated with hernia, is related by M. Martin in the Recueil des Actes de la Societé de Santé de Lyon. Courtial found it adhering to the stomach and colon.

† In a case, probably of this kind, related by Lauverjat, and quoted by Sabatier, the child was extracted by an incision through the vagina, and the woman recovered. De la Med. Oper. Tome I. p. 136. A similar case is to be met with in the Journ. des. Sçavans, 1722. A very interesting case is related by Delisle, in the Bulletin de la Societé Med. d'Emulation, for May and June, 1818; where the child was extracted alive, by an incision through the vagina. The mother died in a quarter of an hour, and the child half an hour after her. It has, in one instance, however, been extracted thus, with success to both parties.

It has been proposed, in these and other circumstances, to perform the cæsarean operation,* in the usual manner, upon the accession of labour; but there is not only great danger from the wound, but likewise from the management of the placenta, which, if removed, may cause hemorrhage, especially in ventral pregnancy, and, if left behind, may produce bad effects. The last, however, is the safest alternative.

The result of the numerous cases upon record will certainly justify, to the fullest extent, our trusting to the powers of nature, rather than to the knife of the surgeon. If any exception is to be made to this rule, it is in those cases where the child is distinctly felt through the vagina, and can be extracted by an incision made there. Allaying pain and irritation in the first instance, by blood-letting, anodynes, and fomentations; and avoiding, during all the inflammatory stage, stimulants and motion, whilst, by suitable means, we palliate any particular symptom, constitute the sum of our practice.

A tendency to suppuration is to be encouraged, by poultices; and the tumour, when it points externally, is either to be opened, or to be left to burst spontaneously, according to the sufferings of the patient, and the exigencies of the case.† The passage of the

* M. Colomb. performed the cæsarean operation, but it ended fatally. Recueil des Actes de la Societé de Lyon. Osiander has also failed.

† Dr. Maclarty relates the case of a negress, where the breech of the child protruded through an ulcer, at the lower part of the abdominal tumour, and the arm at the upper part of the tumour. The intermediate portion of skin was divided, and the fœtus extracted. The head of the child stuck firmly, but was brought out with the forceps. There was no placenta, but putrid matter was discharged with the child. The woman recovered. Med. Comment. Vol. XVII. p. 481. Another case is related by Duverney, where the child was extracted from the groin; and this is one of the rare instances where the placenta was not destroyed. It was extracted with the child. Œuvres, Tom. II. p. 357. Cyprianus gives an instance of the child being removed, after having been retained twenty-one months. Histor. Fœtus Hum. Salva Matre ex Tuba Excisi. Mr. Brodie enlarged the navel with a lancet. Phil. Trans. Vol. XIX. p. 580. See also Mr. Baynham's case, in Med. Facts, Vol. I. p. 73. In Mr. Bell's case an incision, four inches in length, was made, and the bones of two children extracted. Med. Comment. Vol. II. p. 72. Dr. Haighton relates an interesting case, where some bones were discharged by the vagina, but the tumour also pointed above the pubis, and

bones, and different parts of the fœtus, may often be assisted: and the strength is to be supported under the hectic which accompanies the process. After the abscess closes, great care is still necessary, for, by fatigue or exertion, it may be renewed, and prove fatal.*

When no process is begun for removing the fœtus, but it is retained and indurated, our practice is confined to the palliation of such particular symptoms as occur.

CHAP. XIX.

Of the Signs of Pregnancy.

Some women feel, immediately after conception, a particular sensation, which apprizes them of their situation; but such instances are not frequent; and, generally, the first circumstances which lead a woman to suppose herself pregnant, are the suppression of the menses, and an irritable, or dyspeptic state of the

through this one of the ribs appeared. The practitioner made an incision, but so great hemorrhage came on, that he was obliged to apply a bandage till next day, when he extracted the bones. The woman recovered. Med. Records, p. 260. Dr. M'Knight performed the operation in the twenty-second month, although the woman enjoyed tolerable health; very dangerous symptoms supervened, but the woman, who certainly was brought into a very hazardous state by the premature operation, did recover. No placenta was found. Mem. of Med. Society, Vol. IV. p. 342.

* In Dr. Morley's case, this happened two years after the original abscess had healed. Phil. Trans. Vol. XIX. p. 486. Mr. Moyle details a history, where the abscess first of all burst, in consequence of leaping over a hedge. Bones continued to be discharged for a year, without much injury to the health. The abscess then healed, but three years afterwards a tumour again appeared, and, in consequence of exertion, burst; when about a yard of intestine protruded. Some days elapsed before Mr. Moyle saw her. The intestine was then gangrenous, but she lived 12 days longer, and the portion was thrown off before death. Med. Jour. Vol. VI. p. 52.

stomach. She is sick or vomits in the morning, and has returning qualms or fits of languor during the forenoon; is liable to heart-burn through the day or in the evening, and to that disturbed sleep through the night, which so frequently attends abdominal irritation. In some instances, the mind also is affected, becoming unusually irritable, changeable, or melancholy. The breasts often at first become smaller, but about the third month they enlarge, and occasionally become painful; the nipple is surrounded with a brown circle or areola; and often, even at an early period, a serous fluid begins to ooze from it. She looses her looks, becomes paler, and the under part of the lower eye-lid is of a leaden hue. The features become sharper, and sometimes the whole body begins to be emaciated, whilst the pulse quickens. In many instances, particular sympathies take place, causing salivation, tooth-ach, jaundice, &c. In other cases, very little disturbance is produced, and the woman is not certain of her condition, until the period of quickening.

Some females, at the time of conception, have a slight discharge of blood from the uterus, and in almost every case the menses are afterwards suppressed. It has, however, been disputed, how far this suppression is an invariable effect of pregnancy. That some have been regular during the whole time of gestation is attested by distinguished practitioners, whilst others, no less eminent, maintain, that although repeated sanguinous discharges, like menstruation, may take place, yet these are neither regular, as to the monthly period, nor exactly of the quantity of the menses. I have not known any instance where menstruation was perfect and regular during the whole of pregnancy.

In the commencement of pregnancy, the abdomen does not become tumid, but, on the contrary, is often rather flatter than formerly; and, when it does first increase in size, it is rather from inflation of the bowels, than from expansion of the uterus. As an increase of bulk, together with many of the other symptoms of gestation, may proceed from suppression of the menses, we cannot positively, from those signs, pronounce a woman to be with child. The enlargement of the belly is at first accompanied with tension

or uneasiness about the navel, which becomes rather prominent, especially toward the sixth month.

When women have any doubt with regard to their situation, they generally look forward to the end of the second quarter of pregnancy, as a period which can ascertain their condition. For, about the end of the fourth month, or a little sooner or later, in different women, the uterus ascends out of the pelvis, and the motion of the child is first perceived, or it is said to quicken;*(u)* and, in some cases, a few drops of blood flow from the uterus at this period.

(u) Professor Rœderer kept a correct account of one hundred women, noting the time when it was presumed they were impregnated, the period at which they quickened, and again, the time when they were delivered. Out of this number we are informed, that eighty quickened at the fourth month, a portion of the remainder quickened at the the third month, and the rest went on to the fifth. Therefore, we may with great propriety consider four months as the general time of quickening; and upon finding that a woman has quickened, within a day or two, we may with great confidence calculate that she has five months to go.

The term quickening, is certainly not the most accurate phrase that could be selected, to express the simple fact of the uterus rising above the brim or cavity of the pelvis.

It is well known that the impregnated uterus generally remains in the pelvis, as we have just observed, until the latter part of the fourth month; and that after this period, as it enlarges, it necessarily rises above that cavity into the abdomen; but it is to be remarked—

1. The ascent of the impregnated uterus from its position in the pelvis to its subsequent station, is sometimes gradual and unobserved; of course, the sensation of quickening is not then felt.

2. The uterus is sometimes so impacted in the cavity of the pelvis, as not to reach its final station within the abdomen without the assistance of art, producing the disease called retroverted uterus, during which, quickening is never felt.

3. At other times, and those frequent, though not constant, there exists some slight impediment to the ascent of the uterus, *which being suddenly overcome, this viscus rises at once into the abdominal cavity, constituting what has been referred to the fœtus, under the term quickening.*

The sudden intrusion, therefore, of the volume of the uterus among the abdominal viscera, accompanied by as sudden a removal of pressure from the iliac vessels, is supposed to be equal to produce the sensation we have above noticed.

We may then state, "That the sensation of quickening is felt in transitu, at the moment when the uterus, removing from the pelvis, enters the abdominal cavity." Vide Eclectic Repertory, Vol. III. p. 30. October. No. IX.

Some quicken at the end of the third, and others not till the fifth month, which may depend on the size of the pelvis, the growth of the uterus, and quantity of fluid it contains. The motion is first felt in the hypogastrium, and is languid and indistinct, but by degrees it becomes stronger. It is possible for women to mistake the effects of wind for the motion of a child, especially if they have never borne children, and be anxious for a family. But the sensation produced by wind in the bowels is not confined to one spot, but very often is referred to a part of the abdomen, where the motion of the child could not possibly be felt. It is not to be supposed, that the child is not alive till the period of quickening, though the code of criminal law is absurdly founded on that idea. The child is alive from the first moment that it becomes visible, but the phenomena of life must vary much at different periods. The child is not felt to move till after the ascent of the uterus out of the pelvis. Does this arise from any change of the phenomena of life at that time in the child itself, or from the muscular power becoming stronger, or from the uterus now being in a situation, where, there being more sensibility, the motion is better felt? All of these probably contribute to the sensation, which becomes stronger as the child acquires more vigour, and as the relative proportion of liquor amnii decreases. This fœtal motion, however, is not to be confounded with the sensation felt by the mother from the uterus rising out of the pelvis, and which precedes the feeling of fluttering. If this elevation shall take place suddenly, the sensation accompanying it is pretty strong, and the woman at the time often feels sick or faint, and, in irritable habits, even an hysterical fit may attend it. From the time when this is felt, women are said to have quickened, and they afterwards expect to be conscious of the motion of the child. This motion in many, soon increases, and becomes very vigorous; in others, it is languid during the whole of pregnancy; and in a few cases, scarcely any motion has been felt, although the child at birth is large and lively. The morning sickness, and many of the sympathetic effects of pregnancy, generally abate after this, and the health improves during the two last quarters.

Many women suppose, that, by examining the blood drawn from the veins, their pregnancy may be ascertained. Very soon after impregnation, the blood becomes sizy; but it differs from the blood of a person affected with inflammation. In the latter case, the surface of the crassamentum is dense, firm, and of a buff colour, and more or less depressed in the centre. But in pregnancy the surface is not depressed, the coagulum is of a softer texture, of a yellow, and more oily appearance. It is not possible, however, to determine positively, from inspecting the blood; for a pregnant woman may have some local disease, giving the blood a truly inflammatory appearance; and, on the other hand, it is possible for the suppression of the menses, accompanied with a febrile state, to give the blood the appearance which it has in pregnancy.

Examination of the uterus itself is a more certain mode of ascertaining pregnancy. About the second month of gestation, the uterus may be felt prolapsing lower in the vagina than formerly; its mouth is not directed so much forward as before impregnation; it is shut up, and the cervix is felt to be thicker, or increased in circumference. When raised on the finger, it is found to be heavier, or more resisting. Some have advised, that the os uteri should be raised upward and forward, so as to retrovert the womb, in order that its body may be felt, but this is not expedient. Examination, at this period, is liable to uncertainty, because the uterus of one woman is naturally different in magnitude from that of another. But, in the third month, we can arrive at tolerable certainty, the womb being then felt decidedly to be heavier, and more easily balanced on the finger; during which something can be felt to be floating within the uterus. In the beginning of the fifth month, it is found to be higher than when unimpregnated: a kind of fluctuation may be perceived, and by placing the hand on the lower part of the belly, so as to press on the fundus of the womb, it can be made to give more resistance to the finger applied per vaginam, and may by it be rolled about. After quickening, if we pat with the finger on the cervix uteri, we can generally make the child strike gently, so as to be felt. About this time, and still more distinctly afterwards, we can, if the abdominal muscles be relaxed.

feel the uterus extending up from the symphysis pubis, and, in proportion as pregnancy advances, can more readily distinguish the members of the child, and feel its jerks or motions. Examination, per vaginam, informs us of those changes of the cervix and os uteri, which were noticed in a former chapter.

A simple suppression of the menses is apt to be mistaken for pregnancy; nor is it easy to distinguish, for some time, between them; but the doubt is soon cleared up by the state of the womb, and the want of motion at the proper period. In pregnancy, the uterus early descends somewhat in the pelvis, and its mouth becomes more circular, in place of being transverse, whilst the general bulk of the womb and its weight are increased. Simple inflation of the bowels, with suppression of the menses, cannot mislead, if the state of the uterus be attended to; and, at an advanced period, the lower belly is found soft or puffy.

Not unfrequently, a diseased ovarium makes the patient suppose herself pregnant, even although she should have the counter evidence of menstruation. For the abdomen is large, and the ovarium is felt through the parietes, sometimes pretty high, like the uterus, or like a prominent part of a child. The tumour is acted on so far by the aorta as to occasion, at times, a sense of pulsation, which is mistaken for the motion of the child. Per vaginam the uterus is felt high, and its cervix often apparently developed from being raised, and the vagina elongated, whilst the os uteri itself may have its lips shortened. No child, however, can be felt, nor any distinct expansion of the lower part of the uterus, whilst externally the round and circumscribed tumour of the ovarium may be distinguished.

CHAP. XX.

Of the Diseases of Pregnant Women.

§ 1. GENERAL EFFECTS.

Pregnancy produces an effect on the general system, marked often by a degree of fever, and always by an altered state of the blood. This state is the consequence of local increased action, which irritates and excites the system, in the same way as when an organ is inflamed. There would appear to be, likewise, a tendency to the formation of more blood than formerly, and the nervous system is evidently rendered more irritable. The gravid uterus, also, has an effect by sympathy, on other organs or viscera; and likewise produces changes in them, mechanically, by its bulk and pressure.

The effect of irritation, or changes in the condition of the extremities of the abdominal nerves, on the sensorium commune, and whole nervous system, as well as on the arterial action, is so fully proved, that it is not necessary to enter minutely here into that subject. It is, however, of great importance, that it should be borne in mind, in our pathological reasoning; although we are not yet prepared to explain, or, what is worse, to detail, many facts of practical value. The origin and distribution of the par vagum, and great intercostal nerves, might lead to the expectation of very important and intricate sympathies. Temporary affection of certain portions of the intestinal canal produces pain in one eye or side of the head; when another portion is affected, or perhaps the same portion, in a different degree, the opposite side suffers, or the whole forehead is pained, or the upper part of the spinal marrow sympathizes, and a secondary but most marked train of symptoms is thereby produced; cough, feeling of suffocation, numbness, or spasms. Another affection of the bowels gives rise to convulsive agitation of the muscles; whilst, once more, we find irritation, particularly of the small intestines, sometimes occasions drowsi-

ness, or a feeling of fulness and giddiness in the head, sometimes occasioning even a temporary insensibility, or paralysis. Hence some varieties of apoplexy and palsy are originally dependent on affections of the bowels; and hence the distressing, and, in many cases, injurious, effects produced by inefficient doses of laxatives, which irritate partially, without exciting briskly and universally, or in speedy succession, the whole tract of the intestines. Hence the impropriety of employing certain mineral waters, in cephalic affections, more especially if not aided by exercise, or an additional laxative to excite briskly. Hence the origin of sick headach, of many hysterical and anomalous affections, of chorea, and disorders of the sanguiferous system; and hence the most valuable, but too often disregarded, fact, that many excitements, arising clearly from the bowels, or state of the abdominal nerves, are, from this indirect influence on the vascular system, best relieved by resorting to the lancet, before acting on the original seat of the disease by purgatives, which would be too slow in their operation. The uterus may directly influence the system, producing much irritation and many disordered actions, and so doubtless may the stomach and liver; but I question whether these different organs do not more frequently cause sympathetic disorders through the medium of the intestines. Even in many cases of dyspepsia, perhaps in most not dependent on organic disease, the complaint is referrible to the intestines, secretion of bile, crudity in the stomach, sickness and headach; depending more on the state of the bowels than on primary disorders of the stomach. Hence dyspeptic patients are sure to suffer, if they take much liquid, or soups, or acidifiable diet, or aliment which passes easily out of the stomach, and is possessed of a gently laxative quality; for thereby the intestines are excited to a hurtful, but not to a sufficient degree; they are irritated, but not to efficient action. A diet too light is, therefore, equally bad, in such cases, with one which is heavy and indigestible; and that diet is best which neither passes too readily through the changes to be produced on it in the stomach, nor resists too long, nor runs rapidly into acetous fermentation. Every invalid must, to a certain degree, regulate his diet by experience; but when an acute attack is brought on, he will find it still a desi-

deratum to obtain a medicine which will rapidly and briskly excite the intestinal action, without occasioning a long interval of sickness, or being succeeded by debility of the canal.

Effects both powerful and varied are often produced by the uterus in a state of gravidity. These may be divided into those arising from sympathy between the uterus and other abdominal viscera, and confined to these; into those exhibited in more remote parts, whether occasioned by sympathy directly with the uterus, or indirectly through the medium of the sympathising intestines; and into those arising more purely from mechanical pressure.

The effects of pregnancy vary much, both in degree, and in the nature and combination of the symptoms, according to the constitution of the woman, and the natural or acquired irritability of different organs. In a few cases, a very salutary change is produced on the whole system, so that the person enjoys better health, during pregnancy, than at other times. But in most instances, troublesome or inconvenient symptoms are excited, which are called the diseases of pregnancy, and which, in some women, proceed so far, as not only to deprive them of all enjoyment and comfort, but even to produce considerable fear of their safety.

As these proceed from the state of the uterus, it follows, that when they exist, in a moderate degree, they neither admit of, nor require any attempts to cure them; for their removal implies a stoppage of the action of gestation, which is their cause. But when any of the effects are carried to a troublesome extent, then we are applied to, and may palliate, though we cannot take them away. This we do by lessening plethora, if necessary, by blood-letting, and allaying the increased irritability of the system by the regular use of laxatives, which remove that particular state of the bowels, which is so apt to cause restlessness and nervous irritation. If these are not altogether successful, the camphorated julap is a useful medicine.* Besides this general plan, we must diminish the

* Petit, and many after him, have been of opinion, that opium is hurtful during gestation; and there can be no doubt that it generally is so, when given fre-

febrile state of the system, where such exists, by regulation of the diet, and suitable remedies. Individual symptoms must be treated on general principles.

There is a great diversity, both in the effects of pregnancy, and also in the period at which these manifest themselves; for whilst some begin to suffer very early from the irritation of the uterus, and are much relieved from the effects thereof, after the child quickens, others feel very little inconvenience till towards the end of pregnancy, or the last quarter, when the womb is greatly enlarged, and the abdominal viscera disturbed.

In the dietetic part of our treatment, we must bear in mind that we ought neither to admit of such regimen as shall fill the vessels with too much fluid, nor throw the organs of digestion into disorder. Much liquid, even of the mildest nature, ought to be avoided, and the aliment must neither be too rich nor too acescent. Regard, however, must be had, in our directions, to the state of the patient, and the risks to be apprehended, on the one hand, from plethora, and, on the other, from debility. Wherever fruit agrees with the patient, it may be freely allowed, and the same may be said of well-boiled vegetables; but when these occasion acid or flatulence, they must be refrained from. It is of much importance to preserve the bowels in a correct and active state. The exercise to be taken, or permitted, must be regulated by the probable chance of abortion resulting.

§ 2. FEBRILE STATE.

In many cases, the pulse becomes somewhat quicker, soon after impregnation, and the heat of the skin is at the same time a little increased, especially in the evenings. In the latter months of pregnancy, the febrile symptoms in some instances are extremely troublesome; the pulse is permanently frequent, but in the evenings it is more accelerated, whilst the skin becomes hot, and the woman

quently. It is detrimental, both by its effects upon the stomach and bowels, and on the system at large. In severe spasms, or great irritation, it may be necessary, but it never ought to be often repeated, as it ultimately increases the irritability, and injures the bowels, as it would do in chorea.

restless; she cannot sleep, but tosses about till day-break, when she procures short unrefreshing slumber, occasionally accompanied with a partial perspiration. In the morning, the febrile symptoms are found to have subsided; but in the afternoon they return, and the following night is spent alike uncomfortably.

This state is attended with more emaciation, and greater sharpness of features, than is met with in pregnancy under different circumstances; but it is wonderful how well the strength is kept up, in spite of the want of rest, and of the uneasiness which is produced, from this disease being sometimes conjoined with intolerable heat about the parts of generation.

In slight degrees of this febrile state, all that is necessary is sedulously to keep the bowels open, and take away a little blood. But when it becomes urgent, towards the last months of gestation, we are under the necessity of taking away blood more frequently, but not in great quantity at a time; and always in doing so, having regard to the constitution of the patient. The saline julap is of considerable service, by producing a gentle moisture, but a copious perspiration is neither necessary nor useful. The julap may either be given in repeated doses, through the day, or merely one or two doses in the morning, or early part of the night, according to circumstances. The bowels are to be kept open by a mild laxative, such as the aloetic pill, or rhubarb and magnesia. The sulphuric acid is a very good internal medicine. The restlessness is best allayed by sleeping with few bed-clothes; and sometimes great relief is obtained, by dipping the hands in water, or grasping a wet sponge. Opiates very seldom give relief, and ought not to be pushed far, as they make the patient more uncomfortable, and are supposed even to injure the child; at all events, if the occasional exhibition, on any emergency, of a moderate dose of opium or hyoscyamus, fail to procure comfortable sleep, no benefit is to expected from increasing the quantity. Frequently nothing does much good, the state continuing until the woman is delivered. I need scarcely add, that we must take care not to confound this, which may be called the fever of pregnancy, with that arising from local disease, as for instance in the lungs or liver.

There is a species of fever, which may affect women about the middle of pregnancy, and makes its attack suddenly, like a regular paroxysm of ague. It soon puts on an appearance rather of hectic, combined with hysterical symptoms. The head is generally at first pained, or the patient complains of much noise within it, sleeps little, has a loathing at food, with a foul dry tongue, and a considerable thirst, whilst the bowels are constipated. Sometimes she talks incoherently, or moans much during her slumber, and has frightful dreams: occasionally a cough, or distressing vomiting supervenes. This disease is very obstinate, and often ends in abortion; after which, if the patient do not sink speedily under the effects of the process, she begins to recover, but remains long in a chlorotic state, which, if not removed, may terminate in phthisis. I strongly suspect that this disease originates from the bowels, and bears great analogy to the infantile remitting fever. It is usually preceded by costiveness, and is sometimes apparently excited by irregularities in diet. We ought, on the first attack of the cool fit, to check it by warm diluents, with the saline julap. If the proper opportunity be lost, or these means fail, we must lessen irritation, by detracting some blood; open the bowels freely, and afterwards prevent feculent accumulation, keep the surface moist, and palliate troublesome symptoms. If the tongue be early loaded, and the patient is sick or squeamish, a very gentle emetic will be proper. The strength is to be supported. In a state of convalescence, gentle exercise and pure air are useful, but every exertion must be avoided.

§ 3. VOMITING.

Vomiting is a very frequent effect of pregnancy, and occasionally begins almost immediately after conception. Generally it takes place only in the morning, immediately after getting up, and hence it has been called the morning sickness; but, in a few instances, it does not come on till the afternoon. It usually continues until the period of quickening, after which it decreases or goes off, but

sometimes it remains during the whole of gestation. Some women do not vomit, and have very little if any sickness; others begin, after the fourth month, to feel an irritation about the stomach and other viscera; and some remain free from inconvenience till the conclusion of pregnancy, when the distention of the womb affects the stomach. The fluid thrown up is generally glairy or phlegm, and the mouth fills with water previous to vomiting; but if the vomiting be severe or repeated, bilious fluid is ejected. Generally there is no occasion to prescribe any remedies. Puzos, and others, even considered vomiting as salutary; but in some cases, it goes to a very great length, recurring whenever the woman eats, or sometimes even when she abstains from eating, and continues for days or even weeks so obstinate, that she is in danger of miscarrying,* or of suffering from want of food. It is a general rule, in such cases, to take away early a small quantity of blood, a quantity proportioned to the vigour and fulness of the habit and state of the pulse. Of the utility of this practice, the general testimony of practitioners, and my own observation, fully convince me. Narcotic substances, such as opium or hyoscyamus have been tried internally, either without blood-letting or subsequent to it, but uniformly with little advantage. In a few instances, a cloth wet with laudanum applied to the pit of the stomach, has done good. The greatest attention must be paid to the bowels, and most marked benefit is often derived from a gentle dose of Epsom or Cheltenham salts. The severity of the vomiting may also be greatly mitigated by effervescing draughts, or soda water: the last of which, if it do not check the vomiting, renders it much easier. Even cold water has been employed with advantage. A light bitter infusion is sometimes of service. Obstinate vomiting, especially if accompanied with pain, or tension in the epigastric region, may be relieved by the application of leeches to that part, which have been much recommended by Dr. John Sims and M. Lorentz. I have so often found advantage from this remedy, that I speak of it with confidence. If these means fail in procuring

* It is worthy of remark, that abortion is very seldom occasioned by this cause, though emetics are apt to produce it.

speedy relief, it is necessary to refrain for a time eating, and have recourse to nourishing clysters, or to give only a spoonful of milk, soup, &c. at a time. When the vomiting is bilious, and accompanied with pain in the right side and shoulder, cough, and other symptoms of hepatitis, a seton should be immediately introduced into the side, and a very gentle course of mercury given, with circumspection; for if the medicine be given freely, it produces much debility, or abortion, and sometimes accelerates the fate of the patient.

When vomiting is troublesome in the conclusion of pregnancy, it is proper to detract blood, and confine the person to bed. Cloths, dipped in laudanum, should be applied to the pit of the stomach, and a grain of solid opium may be given internally; but if this do not succeed, it is not proper to give larger and repeated doses. Gentle laxatives must be employed.

§ 4. HEARTBURN.

Heartburn often takes place very early after conception, but sometimes not till after the fourth month. This is a complaint so very common, and so generally mitigated by absorbents, such as magnesia, soda, or chalk, that we are seldom consulted respecting it. But when it becomes very severe and intractable, it is requisite to try the most powerful of these means, such as calcined magnesia, combined with pure ammonia.*(x)* When these fail,

(x) The late much regretted Dr. Young, of Maryland, in his ingenious experiments on the digestive process, has almost reduced it to a certainty, that the acid which exists in the stomach is to be referred to the liquor gastricus; that it is the phosphoric acid, and that the acidity of dyspeptic and pregnant women, is owing to the morbid quantity of this acid. Hence, as he justly remarks, the superiority of lime water as a corrector, from its great affinity to phosphoric acid.

The following formula is also recommended by experienced practitioners for the same purpose. I have used it with advantage.

R. Magnesiæ ustæ	ʒj.
Aquæ puræ	℥vss.
Sp. Cinnamon	ʒiij.
Aquæ Ammoniæ puræ	ʒj m.

Two or three spoonfuls to be taken either occasionally, or when the symptoms are more continual, immediately after every meal.

liquor potassæ, or the chalk mixture, with a large proportion of mucilage, may give relief. Laxatives are always indispensable. In obstinate cases, venesection is useful. Emetics have been proposed by Dr. Denman. They are only allowable where there is a constant screatus of disagreeable phlegm. In every severe case the diet must be carefully attended to.

Pyrosis is to be relieved chiefly by laxatives, such as the aloetic pill, with extract of colocynth, some light bitter, or rhubarb and magnesia. If these means fail, antispasmodics may be useful, and rubbing the epigastric region with anodyne balsam.

§ 5. FASTIDIOUS TASTE.

Women, during gestation, are subject to many *bizarreries* in their appetite, and often have a desire to eat things they did not formerly like. This desire is common in cases of abdominal irritation, as we see in those who are afflicted with worms, or have indurated or morbid fæces in the intestines. These longings it has been thought dangerous to deny; for as it was supposed, that they depend upon some peculiar state of the child affecting the mother, it was imagined, that if this was not removed, the infant would sustain an injury, or might even bear the mark of the thing longed for. Into this doctrine it is now unnecessary to enter; and it will be sufficient to add, that when the desire is placed upon any article of diet, it may be safely gratified, and, indeed, generally the inclination leads to some light and cooling regimen.

§ 6. SPASM OF STOMACH AND DUODENUM.

Spasm of the stomach, or duodenum, may often be attributed to some irregularity of diet, to the action of cold, or to the influence of the mind. It is necessary to interfere promptly, not only because the pain is severe, but also because it may excite abortion, or kill the child. A full dose of laudanum, with ether, followed immediately by a saline clyster, is almost always successful; but when the attacks are renewed, then we must endeavour to prevent

them by tonics, such as colomba, oxyde of bismuth, or preparations of steel. It is at the same time, essential that the bowels be kept open, and for this purpose, asafœtida combined with aloes and colocynth is well adapted. Blood-letting is of service, if the attack be prolonged.

When spasm of the stomach takes place in the end of pregnancy, or about the commencement of parturition, with a sense of fulness or uneasiness in the head, it is necessary to detract blood, lest the patient be seized with convulsions. This remedy is likewise proper, when the pain is accompanied with tenderness about the epigastric region, heat of the skin, full pulse, and ruddy face. When pain proceeds from the passage of a biliary calculus, it is to be treated *more solito.*

§ 7. COSTIVENESS.

Costiveness is a general attendant on pregnancy, partly owing to the pressure of the uterus on the rectum, and partly owing to the increased activity of the womb producing a sluggish motion of the bowels. We must not, however, neglect this state, because it naturally attends gestation, for it may occasion many and serious evils. It certainly increases the irritability of the system, as well as some of the stomachic ailments; and is apt to cause irritation of the bowels, which may either excite premature labour, or give rise to much inconvenience after delivery, and not unfrequently occasions convulsions.

Magnesia is a very common remedy, because it at the same time, relieves heartburn; but, when it fails, or is not required for curing acidity in the stomach, the common aloetic pill, the compound rhubarb pill, compound extract of colocynth, or a combination of aloes with extract of hyoscyamus, should the former gripe, may be employed. Castor oil is also given, either alone, or made into an emulsion with mucilage.

It sometimes happens, that indurated fæces are accumulated in the rectum or colon, producing considerable irritation. This causes not only pain, but also an increased secretion of the intestinal

mucus, which is passed either alone, or with blood, together with pieces of hard fæces. This state, like dysentery, is often accompanied with great tenesmus; but it may be readily distinguished, by examining per vaginam, for the rectum is found to be filled with fæces. Our first object ought to be to remove the irritating cause, which might ultimately produce abortion. Clysters are of great efficacy, because they soften the fæces, and assist in emptying that part of the intestine which is most distended. These are to be, at first, of a very mild nature, and must be frequently repeated. It may even be requisite to break down the feculent mass, with the shank of a spoon, or scoop.*(y)* After the rectum is emptied, laxatives, such as castor oil, or small doses of sulphate of magnesia must be given to evacuate the colon; and when the fæces are brought into the rectum, clysters must be again employed. After the bowels are emptied, hyoscyamus should be given, to allay the irritation; or if this be not sufficient, and the pain and secretion of mucus, with tenesmus, still continue, an opiate clyster must be administered, but next day it is to be followed by a mild laxative. And if there be fever, or considerable pain in the abdomen, blood-letting will be necessary. If this costive state be neglected near the time of delivery, the labour is often protracted; and after delivery masses of indurated fæces come down from the colon, producing considerable pain and frequency of pulse. When there is much irritation and sensibility, upon pressing on the abdomen, either before or after delivery, it will be proper to detract blood, at the same time that we use the remedies already pointed out.

§ 8. DIARRHŒA.

The bowels, instead of being bound, may be very open; or costiveness and diarrhœa may alternate with each other. The diar-

(y) The reader is referred, for a very interesting case of alvine concretion, where it became necessary to introduce a long flexible catheter through the hardened and impacted fæces, occupying the superior part of the pelvis, for the purpose of injecting an enema, to Hey's Practical Observations on Surgery, chap. XVIII. case 3.

rhœa is of two kinds; a simple increase of the peristaltic motion, and increased serous secretion; or a more obstinate disease, depending on debilitated and deranged action of the bowels. In the first kind, the discharge is not altered from the natural state, except in being thinner; the appetite is pretty good, and the tongue clean, or only slightly white. This is not to be checked, unless it go to a considerable extent, or continue long, or the patient be weakened by it, or be previously of a debilitated habit. Anodyne clysters, or the confectio catechu, will then be of service. Should the pulse be frequent, and any degree of heat or tension be felt in the abdomen, venesection will be useful. In the second kind, the appetite is lost or diminished, the tongue is foul, and the patient has a bitter or bad taste, and occasionally vomits ill tasted or bilious matter; the breath is offensive, and often the head aches. The stools are very offensive, and generally dark coloured. In this case, small doses of rhubarb give great relief, and one grain of ipecacuanha may occasionally be added to each dose of rhubarb. A light bitter infusion is also a useful remedy. Attention must be paid to the diet, which is to be light, and the food taken in a small quantity at a time. Considerable benefit is derived from soda water, which generally abates the sickness. When the tongue becomes cleaner, and the stools more natural, anodyne clysters may be administered. In all cases of continued diarrhœa, it is useful to have the surface kept warm with flannel; and sometimes a flannel roller, bound gently round the abdomen, gives great relief.

§ 9. PILES.

Pregnant women are very subject to piles. This may be partly owing to the pressure of the womb upon the vessels of the pelvis, but is chiefly to be attributed to a sluggish state of the intestinal canal, communicating a similar torpor to the hemorrhoidal veins. As this state is attended with costiveness, the disease has been considered as dependent on the mechanical action of the fæces; but whatever truth may be in this opinion, in some cases, yet generally it is without foundation; and it is no unusual thing for those who are subject to piles, to be able to foretell an attack, by the appear-

ance of peculiar symptoms, indicating diminished action of the alimentary canal. The treatment of this disease is two-fold. We are to remove the cause by such means as give a brisker action to the bowels, such as bitters and laxatives; which last are also of great service by removing the irritation of the fæces from the rectum, and rendering them softer, by which the expulsion gives less pain. For this purpose, cream of tartar alone, or combined with sulphur, has been generally employed; but we may, with equal advantage, give small doses of castor oil, or of any of the mild neutral salts, dissolved in a large quantity of water. Besides removing the cause, we must likewise lessen the effect by such local means as abate irritation and sensibility. When the pain, inflammation, and swelling, are great, it is of service to detract blood topically, by the application of leeches, or, especially if there be considerable fever, blood-letting may be necessary, as in other cases of local inflammation. The diet should be spare; all stimulants and cordials must be avoided; cooling and anodyne applications to the tumour are also very proper, such as an ointment containing a small quantity of acetate of lead, or a weak solution of the acetate of lead in rose water, or a mixture of the acetum lithargyri and cream. Sometimes astringents are of service, such as the gall ointment; or narcotics, such as opium* or belladona. If these means fail, it will be proper to give an anodyne clyster, and apply fomentations or emollient poultices to the tumour, but every practitioner can tell how often all topical applications have disappointed him. In some cases, the tumour becomes slack, and subsides gradually; in other instances it bursts, and more or less blood is discharged. If the hemorrhage be moderate, it gives relief; but if profuse, it causes weakness, and must be restrained by pressure and astringents. Great pain, or much hemorrhage, are both apt to excite abortion; as the former is apt to act by sympathy in the neighbouring parts. Even in the unimpregnated state, internal piles are apt to produce symptoms, supposed to arise from the womb or vagina. The rectum-bougie in such cases is useful.

* Dr. Johnston advises the following ointment to be applied, and then a poultice to be laid over the tumour. R. Ol. Amygd. ℥i. Ol. Succini ss Tr. Opii. ʒii. M. *System*, p. 125.

§ 10. AFFECTIONS OF THE BLADDER.

The bladder is often affected by pregnancy. In some instances, like the intestines, it becomes more torpid than formerly; so that the woman retains her water long, and expels it with some difficulty, and in considerable quantity at a time. This state requires great attention, for retroversion of the uterus may, at a certain stage of gestation, be readily occasioned. There is not much to be done with medicines in this case; for although soda, and similar remedies, sometimes give relief, yet more reliance must pe placed on the regular efforts of the patient. Should these be delayed too long, then the catheter must be employed.

More frequently the bladder is rendered unusually irritable, especially about its neck, and the uretha participates in this state. There is also, in many instances, an uneasiness felt in the region of the bladder itself. This state requires a very different treatment from the former, for here it is our object to avoid every saline medicine which might render the urine more stimulating. Relief is to be expected by taking away blood, giving small doses of castor oil, and, occasionally, the extract or tincture of hyoscyamus, and encouraging the patient to drink mucilaginous fluids, which, if they do not reach the bladder as mucilage, at least afford a bland addition to the blood, from which the urine is secreted. The state of the bladder is sometimes productive of a slight irritation about the symphysis of the pubis, rendering the articulation less firm and more easily separated. In such circumstances, when the pubis is tender, blood-letting and rest are the two principal remedies.

A very distressing affection, which is often conjoined with this state of the bladder and uretha, but which may also take place without it, is a tender and irritable state of the vulva, producing great itching about the pudendum, especially during the night, and generally the urine is felt very hot. This distressing condition is often alleviated by blood-letting and laxatives; and when the itching is great, a sponge, dipped in cold water, or in cold solution of cerussa acetata, should be applied. If much fever exist the saline julap, combined with a little tincture of opium, is useful.

Incontinence of urine is not uncommon in the end of gestation, and is produced by the pressure of the uterus on the bladder, by which the urine is forced off involuntarily, whenever the woman coughs or moves quickly; or at least she cannot retain much of it, being obliged to void it frequently, but without strangury. For this complaint there is no cure; and many consider it as a favourable omen, that the child's head is resting on the os uteri. When the uterus is very pendulous, some advantage may be obtained, by supporting the belly with a proper bandage attached to the shoulders.

§ 11. JAUNDICE.

Connected with the state of the alimentary canal, is the jaundice of pregnant women. This disease appears at an early period, and is preceded by dyspeptic symptoms, which generally increase after the yellowness comes on. In some instances, the tinge is very slight, and soon disappears. In other cases, the yellow colour is deep and long continued, and the derangement of the stomach and bowels considerable. Emetics, and other violent remedies, which are sometimes used in the cure of the jaundice, are not allowable in this case; and, in every instance, when young married women are seized with jaundice, we should be very cautious in our prescriptions. Gentle doses of calomel, or of other laxatives, with some light bitter infusion, are the most proper remedies; and generally the complaint soon goes off. Jaundice may also take place in the end of gestation; and in this case, it proceeds most frequently from pressure on the gall duct. Sometimes, however, it is dependent on a disease of the liver itself, which may occur at any period of gestation, and is marked by the usual symptoms. In this case, the danger is very great, and can only be averted by taking cautious measures for removing the hepatic disease.

§ 12. COLOURED SPOTS.

In some cases, the skin is partially coloured; the mouth, for in-

stance, being surrounded with a yellow or brown circle, or irregular patches of these colours appearing on different parts of the body. This is an affection quite independent of the state of the bile, and seems rather to be connected with certain conditions of the alimentary canal. It goes off after delivery, and does not require any peculiar treatment.

§ 13. PALPITATION.

The thoracic viscera not unfrequently suffer during pregnancy. Palpitation of the heart is a very common affection, and extremely distressing. It is a disease so well known, that it is needless here to describe it; but it may not be improper to observe, that women themselves sometimes mistake for it a strong pulsation of the arteries, at the upper part of the abdomen. It may make its attack repeatedly in the course of the day; or only at night before falling asleep; or at the interval of two or three days; and is very readily excited by the slightest agitation of the mind. It is generally void of danger; but, in delicate women, and in those who are disposed to abortion, it sometimes occasions that event; and, if long continued, it may excite pulmonic disease in those who are predisposed to it. Absolute rest, with antispasmodics, are requisite during the paroxysm. Hartshorn, ether, and tincture of opium, may be given, separately or combined. Roderic a Castro prescribes a draught of hot water. The attacks are to be prevented by the administration of tonics, such as tincture of muriated iron; and of fœtids, such as valerian and asafœtida. Fatigue and exertion must be avoided, and the mind kept tranquil. If the person be plethoric, head be pained, or the face flushed, it is useful to take away a little blood. The bowels are to be carefully kept open. The diet must be attended to; for it is often produced by a disordered stomach.

A tendency to nervous or hysterical diseases is to be prevented, in those who are liable to them, by occasional blood-letting, the use of laxatives, and camphor, or fœtids. Opiates are only to be given for the immediate relief of urgent symptoms.

§ 14. SYNCOPE.

Another distressing affection of the heart, attendant on pregnancy, is syncope. This may take place at any period of gestation, but is most frequent in the three first months, or about the time of quickening. It often occurs in those who are otherwise healthy, but it also may occur daily for some time in those who are weakened by a loose state of the bowels, alternating with costiveness, or by want of sleep occasioned by toothach. It may succeed some little exertion, or speedy motion, or exposure to heat; but it may also come on when the person is at perfect rest. The paroxysm is sometimes complete, and of long duration; at other times, the person does not lose her knowledge of what is going on, and soon recovers. A recumbent posture, the admission of cold air, or application of cold water to the face, the use of volatile salt, and the cautious administration of cordials, constitute the practice during the attack. Should the fit remain long, we must preserve the heat of the body, otherwise a protracted syncope may end in death. Those who are subject to fainting fits, must avoid fatigue, crowded or warm rooms, fasting, quick motion, and agitation of the mind. Tonics are useful when the system is weak, and the bowels must be regulated.

There is a species of syncope, that I have oftener than once found to prove fatal in the early stage of pregnancy, which is dependent, I apprehend, on organic affections of the heart, that viscus being enlarged, or otherwise diseased, though perhaps so slightly as not previously to give rise to any troublesome, far less any pathognomonic symptoms. Although I have met with this fatal termination most frequently in the early stage, I have also seen it take place so late as the sixth month of pregnancy.

§ 15. DYSPNŒA AND COUGH.

Sudden attacks of dyspnœa in those who were previously healthy, are generally to be considered as hysterical, and are readily removed by antispasmodics. There is, however, a more obstinate

and protracted symptom, not unfrequently connected with pregnancy, namely cough. This may come in paroxysms, which are generally severe, or it may be almost constant, in which case it is short and teasing. Sometimes a viscid fluid is expectorated, but more frequently the cough is dry. During the attack, the head is generally painful, and the woman complains much of the shaking of her body, especially of the belly. All practical writers are agreed with respect to the danger of this disease, for it is extremely apt to induce abortion; and it is worthy of remark, that after the child is expelled, the cough often suddenly ceases. But exposure to cold frequently brings it back; and should there be a predisposition to phthisis, that disease may be thus excited. Blood-letting must be early, and sometimes repeatedly employed; the bowels kept open; and lozenges, containing opium or hyoscyamus, must be occasionally used, to allay the cough. A large Burgundy pitch plaster, applied betwixt the shoulders, is of service; or a small blister over the junction of the cervical and dorsal vertebræ. Should abortion take place, and the cough continue, tonics, such as myrrh and oxyde of zinc, ought to be administered.

§ 16. HÆMOPTYSIS AND HÆMATEMESIS.

In some instances, hæmoptysis or hæmatemesis take place in pregnancy, especially in the last months, and these are very dangerous affections. Blood-letting is the remedy chiefly to be depended on; and afterwards purgatives should be given; acids and hyoscyamus may be employed to allay irritation. If these means do not succeed, the patient dies. Should the hemorrhage take place during labour, or should pains come on prematurely, and the os uteri dilate, as sometimes happens, it will be prudent to accelerate the delivery.

§ 17. HEADACH AND CONVULSIONS.

Headach is a very alarming symptom, when it is severe, constant, and accompanied with symptoms of plethora. If the eye

be dull or suffused, and the head giddy, especially when the patient stoops or lies down, with a sense of heaviness over the eyes, or within the skull, great danger is to be apprehended, particularly if she be far advanced in her pregnancy. This is still more the case, if she complain of ringing in the ears, and see flashes of fire; or have indistinct vision. In such circumstances she is seized either with apoplexy or convulsions. These diseases are to be prevented by having immediate recourse to blood-letting and purgatives; and the same remedies are useful, if either one or other of these diseases have already taken place. The quantity of blood which is to be detracted, must be determined by the severity of the symptoms, the habit of the patient, and the effect of the evacuation; but, generally, moderate evacuation will prevent, whilst very copious depletion is requisite to cure these diseases. If the headach be accompanied with œdema, the digitalis is a useful addition to the practice. I shall not at present enter more minutely into the treatment of convulsions. I shall only remark, that the first thing to be done is to detract blood from a vein; next, the bowels are to be immediately opened by a clyster, and then a purgative is to be administered.

If the patient be seized with apoplexy, there is seldom any attempt made to expel the child,* and, in my own practice, I have never known that event take place. In eclampsia, on the contrary, if the paroxysm be protracted, there is generally an effect produced on the uterus; its mouth opens, and the child may be expelled, if the patient be not early cut off by a fatal coma. Whenever expulsive effects come on, we must conduct the labour according to rules hereafter to be noticed. In some instances, palsy either succeeds an apoplectic attack, or follows headach and vertigo. This disease does not commonly go off until delivery have taken place; but it may be prevented from becoming severe, by mild laxatives and light diet; and, after the woman recovers from her labour, the disease gradually abates, or yields to appropriate remedies.

All headachs, however, do not forebode these dismal events, for

* Mr. Wilson's case is an exception to this. Vide Med. Facts, Vol. v. p. 96.

often they proceed from the stomach, and evidently depend on costiveness, dyspepsia, or nervous irritation. These are generally periodical, accompanied with a pale visage; they feel more external than the former, and are often confined to one side of the head. They are attended with acidity in the stomach, eructations, and sometimes considerable giddiness, or slight sickness, with bitter taste in the mouth. They are relieved by the regular exhibition of laxatives, by sleep, the moderate use of volatiles, and the application of ether externally.

Hysterical convulsions are not uncommon during gestation, and more especially during the first four months. They occur in irritable habits, or in those who are naturally disposed to syncope, or who have been exhausted by any pain, depriving them of rest, or by alvine discharges. They are distinguished by the face usually being pale during the attack, the countenance is very little distorted, there is no foam issuing from the mouth, the patient for a time lies as in a faint, and then has convulsive motions, or screams and sobs, and the fit generally is terminated by shedding tears. The treatment, in the first instance, consists in administering antispasmodics, particularly opiates and volatile fœtids. Afterwards, the returns are to be prevented by bringing the bowels into a correct state, and keeping them so. The exercise is to be gentle, but taken regularly. The diet mild, but nourishing. Sleep is to be procured, if necessary, by opiates; and tonic medicines, with the assistance of ammoniated tincture of valerian, must complete the cure. If, however, there be a feeling of fulness about the head, or weight, or headach, it is, even in spare habits, of service to take away a little blood.

§ 18. TOOTHACH.

Toothach not unfrequently attends pregnancy, and, sometimes, is a very early symptom of that state. The tooth may be sound or diseased, but, in neither case, ought we to extract it in the early months, if it be possible to avoid the operation. I have known the extraction followed in a few minutes by abortion. Blood-letting

frequently gives relief, and, sometimes, a little cold water taken into the mouth abates the pain. In other cases, warm water gives more relief.

§ 19. SALIVATION.

Salivation is, with some women, a mark of pregnancy. It has been supposed that there is a sympathy existing between the pancreas and salivary glands, and that the phlegm ejected by vomiting proceeded from the former, whilst, in many instances, the latter yielded an increased quantity of viscid saliva. This is a symptom which scarcely demands any medicine, but, when it does, mild laxatives are the most efficacious.

§ 20. MASTODYNIA.

Pain and tension of the mammæ frequently attend gestation, and these symptoms are often very distressing. If the woman have formerly had a suppuration of one mamma, that breast is generally most painful, and she is afraid of abscess again forming. In other instances, the pain, being accompanied with increased hardness of the breast, produces apprehension of cancer. These fears are generally groundless; but if suppuration do take place, it is to be treated on general principles. Blood-letting often relieves the uneasy feeling in the breast, which is also mitigated by gentle friction with warm oil. Nature often gives relief, by the secretion of a serous fluid which runs out from the nipple; but if this be much encouraged by suction, Chambon remarks, that the fœtus may be injured. This, however, is so far from being always the case, that many women, who conceive during lactation, continue to nurse for some months, without detriment to the fœtus. The discharge is in some instances so great about the seventh month, or later, as to keep the woman very uncomfortable. The diet in this case should be dry.

The sudden abatement of the tension, and fulness of the breasts, with a diminution of size, are unfavourable circumstances, indicating either the death of the child, or a feeble action of the womb.

§ 21. ŒDEMA.

In the course of gestation, the feet and legs very generally become œdematous; and sometimes the thighs and labia pudendi participate in the swelling. The swelling is by no means proportioned always to the size of the womb, for, as has been remarked by Puzos, those who have the womb unusually distended with water, and those who have twins, have frequently very little œdema of the feet. This disease is partly owing to the pressure of the uterus, but it also seems to be somewhat connected with the pregnant state, independent of pressure; for in some instances the œdema is not confined to the inferior extremities, but affects the whole body. A moderate degree of œdema, going off in a recumbent posture, is so far from being injurious, that it is occasionally remarked, that many uneasy feelings are removed by its accession; but a greater and more universal effusion indicates a dangerous degree of irritation. In ordinary cases, no medicine is necessary except aperients; but, when the œdema is extensive or permanent, remaining even after the patient has been for several hours in bed, it may be attended with unpleasant or dangerous effects, such as convulsions; or, it may predispose to puerperal diseases; we must therefore lessen it by means of those agents which alleviate the other diseases of pregnancy, namely blood-letting and purgatives. These means are always proper, and are never to be omitted, unless the strength be much reduced; in which case, we only employ the purgatives and cordials prudently, with acetate of potash, or sweet spirit of nitre. Diuretics, generally, are not successful, and many of them, if given liberally, tend to excite abortion. Friction relieves the feeling of tension.

§ 22. ASCITES.

Ascites may, like œdema, be excited, in consequence of some condition connected with gestation, or may be independent of it,

arising from some of the ordinary causes of dropsy, especially from a disease of the liver. In the last case, medicine has seldom much effect in palliating or removing the disease; and the woman usually dies, within a week or two after her delivery, whether that have been premature, or delayed till the full time. When ascites is not occasioned by hepatic disease, and appears for the first time during gestation, it is generally connected with the œdematous state above mentioned, and seldom comes on until the woman has been at least three months pregnant. If it be not attended with other bad symptoms, such as headach, feverishness, drowsiness, &c. it abates and goes off, a little before, or soon after delivery, which is often premature. But in other instances it increases, and from the distention produced, very great difficulty of breathing is occasioned. I have seen diuretics given very freely in these cases, but most frequently without any benefit. On this account, and also from the danger of these exciting abortion, or premature labour, I am inclined to dissuade from their use, except in urgent cases. Then the mildest ought to be employed, such as cream of tartar, juniper tea, acetate of pot-ash, &c. If any of these produce much irritation of the urinary organs, they must be exchanged for others. Purgatives and blood-letting are more useful; for this is an acute disease, more easily remedied by depletion than by any other means. If, in spite of this treatment, the swelling increase, paracentesis must be performed.

Ascites may have existed previously to pregnancy, and the two causes combined, may produce a very great enlargement of the belly. In this case, the uterus may be felt through the teguments, sometimes very much compressed, as if the child lay across. Mild diuretics tend to keep the disease at bay; and if the distention be very great, especially at an early stage, my experience leads me to conclude, that after quickening, a great part of the fluid may be drawn off safely, provided, during the operation and afterwards, the abdomen be carefully and uniformly supported by a bandage. It is useful to know this, as the distention is sometimes so great, that life could not go on, without much distress, till the end of gestation. The operation, I think, is more apt to be succeeded

by labour, if performed in the last month, than earlier.(z) In all cases where the patient is weak, we must take great care that the puncture be correctly closed: for if its lips inflame instead of adhering, fatal peritonitis is the invariable result.

§ 23. REDUNDANCE OF LIQUOR AMNII.

When the liquor amnii is in too great quantity, much inconvenience is produced, and not unfrequently the child perishes. This disease is known, by the woman being unusually large at an early period of gestation, for generally by the seventh month, she is as big as she ought to be in the ninth. It is distinguished from ascites, by the motion of the child being felt, though obscurely, by the

(z) Instances have occurred, where in cases of ascites combined with pregnancy, the operation of paracentesis has been performed, although this is a practice by no means to be commended. In the eighth Vol. of the London Med. Facts and Observations, there is a case related by Mr. Simmons, of a pregnant woman with symptoms of ascites being twice tapped, first, in the second month of pregnancy, when fourteen quarts of water were drawn off, and the second time, when five months advanced, when only a few ounces of blood followed the withdrawing of the trocar; at the full time she was delivered of a healthy child, having suffered no inconvenience from the operation.

Another case is related in the seventh Vol. of the London Med. and Phys. Journal, by Dr. Vieusseux, of Geneva, where a woman in the fifth month of pregnancy was tapped, but it appears that the consequence of this operation was an abortion, although the patient soon recovered. Both these cases are related by the gentlemen under whose observation they fell, to prove that the paracentesis has been performed, and even the uterus perforated, [which they suppose was the case in both these instances,] whithout material injury to the patient.

In the same work is related a case of a woman, who was tapped no less than five times during pregnancy: at the full period she was, notwithstanding, delivered of a fine child, and recovered completely from the puerperal state.

These cases prove, how much the system will sometimes suffer with impunity, but at the same time we must acknowledge, that it is best not to presume too far on the preservative energies of nature.

Sometimes pregnancy has been, from gross inaccuracy, mistaken for dropsy, and the paracentesis been performed with a fatal effect; the patient in one instance fainting, and expiring almost instantaneously. Upon examination after death, it was found that the trocar had not only perforated the uterus, but had also penetrated the fœtus!

mother, and the breasts enlarging. Per vaginam we can ascertain, that the uterus contains a substance, which alternately recedes and descends as the finger strikes on the lower part of the womb. This is to be considered as a dropsical affection of the ovum, but the health of the woman seldom suffers so much as in ascites; the tongue, however, is white, and the urine is diminished in quantity. The legs are less apt to swell than in a common pregnancy. The distension may, in the advanced stage, prove troublesome. When the quantity of water is greatly increased, the child is seldom kept till the full time, but is generally expelled in the eighth month, or sooner, and the labour is apt to be accompanied or succeeded by uterine hemorrhage. In some instances, the child occupies the upper part of the uterus, and the water the under, at least during labour. Twice in the same woman, in succeeding pregnancies, I found the child contained in the upper part of the uterus, and embraced by it as if it were in a cyst, whilst several pints of water lay between it and the os uteri. When the water came away, filling some basins, then the child descended to the os uteri, but was born dead, with the thighs turned firmly up over the abdomen, and other marks of deformity.

We know the water to be contained in the uterus, and not in the abdominal cavity, by feeling the shape and firmness of the uterus, and by the greater obscurity of the fluctuation. In ascites, complicated with pregnancy, the fluid is more distinct, and the shape of the uterus cannot be perceived till after tapping. This is a disease of the ovum, and not of the mother, for even the fœtus itself is often malformed, or at least blighted. The affection *in toto* may be considered as a species of monstrous conception. Some particular condition of the parent may, however, in certain cases, occasion it. For instance, it may be connected with a syphilitic taint in either the father or mother; or with some less obvious cause impairing the action of the womb, but not directly producing a miscarriage; with lunacy or idiotism; or with a state of general or uterine debility; or with an original imperfection of the ova in the ovarium: for a woman may, without any apparent cause, have repeatedly this kind of pregnancy. All of these causes do not operate uniformly to the same extent; but the fœtus suffers in propor-

tion to their operation. It is either born very feeble and languid, and is reared with difficulty, or it dies almost immediately, or it perishes before labour commences; and this is generally the case when the diseased state exists to any great degree. The period of the child's death is usually marked by a shivering fit, and cessation of motion in utero, at the same time that the breasts become flaccid. Afterwards irregular pains come on, with or without a watery discharge. Sometimes the woman is sick or feverish for a few days before labour begins.

If the liquor amnii be not increased greatly beyond the usual quantity, the woman may go the full time, but, from the distention of the uterus, is apt to have a lingering labour.

Tonics, the cold bath, dry diet, with occasional venesection, and the use of laxatives, during pregnancy, may be of service, but frequently fail. Diuretics do no good. A course of mercury conducted prudently, previous to conception, is the only remedy, when we suspect a syphilitic taint. It may be necessary to prescribe it to both parents. When it proceeds from some more latent cause, I think it is useful for preventing a repetition of the disease, to make the mother nurse, even although her child be dead. Mercury ought also to be tried.

When the distention produces much distress, it has been proposed to draw off the water by the os uteri; or this has been done in one case by the common operation of paracentesis, the woman surviving, and labour taking place on the twenty-first day.* This practice is, however, generally improper, and is seldom requisite; pains usually coming on whenever the symptoms become severe. When the os uteri is considerably dilated by the pains, it may be proper to rupture the membranes, as has been advised by Puzos.

* Vide case by Noel Desmarais, in Recueil Period. Tom. VI. p. 349. M. Baudelocque gives a memoir on this subject, in the same volume. Scarpa, also, seems to defend the paracentesis, but it is impossible to discover any superiority this has over the safer mode of introducing a catheter or tube, by the os uteri.

§ 24. WATERY DISCHARGE.

Discharges of watery fluid from the vagina are not unfrequent during pregnancy, and generally depend upon secretion from the glands about the cervix uteri. It has been supposed, that, in every case they proceeded from this cause, or from the rupture of a lymphatic, or the evacuation of a fluid collected between the chorion and amnion, or the water of a blighted ovum, in a case of twins; for in every instance, where the liquor amnii has been artificially evacuated, labour has taken place. But we can suppose, that the action of gestation may, in some women, be so strong, as not to be interrupted by a partial evacuation of the liquor amnii. Even granting the water to be collected exterior to the chorion, there must be a strong tendency to excite labour, if the quantity discharged be great;* and if the uterus can resist this, it may also be unaffected by the evacuation of liquor amnii. I have known instances, where, after a fright or exertion, a considerable quantity of water has been suddenly discharged, with subsidence of the abdominal tumour, or feeling of slackness; and even irregular pains have taken place, and yet the woman has gone to the full time.† These prove, as far as the nature of the case will admit of proof, that the water has been evacuated. Sometimes only one discharge has taken place, but oftener the first has been followed by others; and these are often tinged with blood. The aperture seems to heal, if gestation go on; for, during labour, a discharge of water takes place. Much more frequently labour does take place. Even when the discharge proceeds only from the vessels or glands about the os uteri, if the woman be not careful, a hemorrhage may take

* Vide Dr. Alexander's case, in Med. Comment. Vol. III. p. 187.

† Dr. Pentland relates a very distinct case, where the liquor was, in the third or fourth month, discharged in a fit of coughing. The belly fell, but she still went on to the full time, and had a good labour, Dublin Med. and Phys. Essays, No. I. art. 3.—I have known a discharge of water take place at short intervals, for some weeks; and then the funis umbilicalis protruded, without any exertion, or any pains to rupture the membranes, which is a demonstration that the membranes had been previously open, and that the discharge of liquor did not speedily excite labour.

place, followed by labour. This is most likely to happen if there have been a copious discharge.

The practice, in these cases, is to confine the patient for some time to bed. An anodyne ought also to be given, and may be repeated occasionally, if she be affected either with irregular pain, or nervous irritation; previous venesection often renders this more useful. The bowels are to be kept open. If we suppose the discharge to be from the glands or vessels about the os uteri, we may, with advantage, inject some astringent fluid, such as a solution of sulphate of alumine.

It sometimes happens, that a large hydatid is lodged between the ovum and the os uteri, and it may be expelled several weeks before parturition. If care be not taken, this may be followed by hemorrhage.

§ 25. VARICOSE VEINS.

Varicose tumours sometimes appear on the legs. They are not dangerous, but are often painful. By pressure, they can be removed; but I am not sure that it is altogether safe to apply a bandage round the legs, so tight as to prevent their return. It is better, in ordinary cases, to do nothing at all; but where there is much pain, a recumbent posture and moderate pressure give relief.

§ 26. MUSCULAR PAIN.

From the distention of the abdominal muscles, pain may be produced, either about the extremities of the recti muscles, or the origins of the oblique or transverse muscles. These pains are not dangerous, but give unnecessary alarm if the cause be not known. It is impossible to remove them, but they may be mitigated by anodyne embrocations. If the pain be severe along the edge of the ribs, relief may be obtained by applying round the upper part of the abdomen a narrow band of leather, spread with adhesive plaister.

There is another cause of pain, which sometimes affects these

muscles, but oftener those about the pelvis and hips. This seems to consist in a diminished power of the muscles, in consequence of the uterine action, and thus the fibres are not capable of the same exertion as formerly. A long walk, or some little fatigue, may produce such an effect, as to render them painful for a long time: or even without any unusual degree of motion, they may ache, and produce the sensation of weariness. These pains have been supposed to be most frequent when the woman has twins; but this is far from being a general rule. They may occasion an apprehension that she is going to miscarry. Rest is the principal remedy; but if they be severe, relief may often be obtained by venesection.

Pain in the side, particularly the right side, is sometimes, at an advanced period of gestation, both muscular, and also connected with the state of the bowels, especially of the colon. It is frequently most severe, and may be rendered still more distressing, by being combined with violent heartburn, or water-brash. It comes on chiefly at night, and instead of being relieved by lying down, is often increased on going to bed. It is usually accompanied with much motion of the child. Venesection sometimes gives relief, but generally more advantage is derived from rubbing with anodyne balsam, attending to the state of the bowels, and regulating the diet. Although the pain be very severe, it seldom brings on labour. In certain cases there is a complication of pleuritic pain of the side, spasm of the ureter, and some portion of the intestines, and sensibility of part of the abdominal muscles. Blood-letting and purgatives, followed by anodynes, and rubefacient applications, form the practice.

§ 27. SPASM OF URETER.

Spasm of the ureter, or some violent nephritic affection, may occur during gestation. The pain is severe, the pulse slow and soft, and the stomach often filled with wind. The symptoms are attended with distressing strangury, and if not soon removed, may cause premature labour. Decided relief is obtained by giving a saline clyster, and after its operation, injecting eighty drops of

laudanum mixed with a little starch. A sinapism is to be applied to the loin, and if these means fail, blood must be taken away.

§ 28. CRAMP.

Spasms in the inferior extremities are often very distressing. These may come on suddenly, but occasionally they are preceded by a sense of coldness, and accompanied with a feeling of heat. They are removed by change of posture, and gentle friction. They have, by some, been thought to indicate a wrong presentation of the child; but this opinion is not supported by experience. They proceed from the pressure of the uterus on the nerves in the pelvis.

§ 29. SPASM OF THE UTERUS.

The gravid uterus itself, at various periods of gestation, is liable to be affected with spasm. This is marked by great pain in the region of the uterus, subject to exacerbations, but never going entirely off. It is presently succeeded by inflammation, marked by frequency of pulse, thirst, heat of skin, sometimes sickness, constipation, more or less tenderness of the hypogastric region, with severe pain stretching to one or both groins, and occasionally in the back. In every instance I have known, the ovum has been expelled, and in some, the patient has sunk soon afterwards. The practice, even when the case is clearly spasmodic, consists in detracting blood, and after opening the bowels, giving powerful doses of opium, either by the mouth, or as clysters; and this remedy must be repeated as often as necessary. When inflammation has taken place, the detraction of blood must be pushed farther, the semicupium employed, stools procured, and anodyne clysters administered. When abortion takes place, the strength must be supported, and irritation allayed by the free use of opium; but the patient is in a dangerous state.

§ 30. DISTENTION OF THE ABDOMEN.

In a first pregnancy, the abdominal muscles generally preserve a greater degree of tension than they do afterwards; and therefore the belly is not so prominent as in succeeding pregnancies. Sometimes the muscles and integuments yield so readily to the uterus, that it falls very much forward, producing a great prominence in the shape, inconvenience from the pressure on the bladder, and pain in the sides from the increasing weight of the projecting uterus. In such cases, benefit may be derived from supporting the abdomen with a bandage connected with the shoulders. In other instances, the muscles and integuments do not yield freely, but the belly is hard and tense; the patient feels shooting pains about the abdomen, and sometimes miscarries. This state is relieved by blood-letting and tepid fomentations. When the skin does not distend freely, and becomes tender and fretted, or when these effects are produced by very great distention, benefit is derived from fomenting with decoction of poppies, and afterwards applying a piece of soft linen, spread very thinly with some emollient ointment.

There is sometimes a disposition to distend unequally, so that one side yields more than the other, or even part of one side, or one muscle more than the rest, producing a peculiar shape. This is attended with no inconvenience.

§ 31. HERNIA.

It is very usual for the navel of pregnant women to become prominent even at an early stage. In some instances, such a change is produced, as to allow the intestine or omentum to protrude, forming an umbilical hernia; or if the woman have been formerly subject to that disease, pregnancy tends to increase it, whilst, on the other hand, the intestines being soon raised up by the ascending uterus, inguinal and femoral herniæ are not apt to occur, or are even removed if they formerly existed. Umbilical hernia ought to be either kept reduced by a proper bandage, or at least prevent-

ed, by due support, from increasing; and during delivery, we must be careful that the intestine be not forcibly protruded, as it might be difficult to replace it. After delivery, a truss must be applied with spring wings, which come round by the side of the belly.

In some cases, during gestation, the fibres of the abdominal muscles separate, so that a ventral hernia is formed. The same circumstance may take place during parturition; and the laceration is sometimes so large, that afterwards, whenever the muscles contract, as, for instance, in the act of rising, a quantity of intestine is forced out, forming a hard tumour like a child's head. It is necessary in this, and in all other cases of large hernia, to be careful that compression be applied immediately after delivery, and also during the expulsion of the child. By neglecting this, syncope and uterine hemorrhage have been occasioned.

Herniæ of the bladder should always be reduced in the commencement of labour, for it may interfere with the process of parturition, or the bladder may be exposed to injury.

§ 32. DESPONDENCY.

It is not uncommon to find women very desponding during pregnancy, and much alarmed respecting the issue of their confinement. This apprehensive state may be the consequence of accidents befalling others in parturition; but not unfrequently it proceeds from a peculiar state of mind, dependent on gestation. Some, who at other times enjoy good spirits, become always melancholy during pregnancy, whilst others suffer chiefly during lactation. Little can be done by medicine, except to obviate all cause of disease, or uneasiness of the body; the mind is to be cheered and supported by those who have most influence with the patient.

§ 33. RETROVERSION OF THE UTERUS.

Retroversion of the uterus was described, but not explained, by Ætius, Rod. a Castro, Mauriceau, and La Motte, and afterwards demonstrated by Gregoire, and his pupil Levret, but was in this

country first accurately illustrated by Dr. Hunter, in 1754. It is an accident which is always attended with painful, and sometimes fatal consequences, chiefly owing to the effect produced on the bladder. If the pelvis be of the usual size, it may take place at any time during the third and fourth months of pregnancy;(a) or if the pelvis be large, or the ovum not much distended with water, it may occur in the fifth month. It may also be produced, when the womb is enlarged to a certain degree by disease.* We recognize retroversion of the uterus chiefly by its effects on the bladder, and also by difficulty in voiding the fæces; for although the patient may be distressed sometimes with tenesmus, she usually passes little at a time. When the retroversion is completed, bearing-down pains may be excited, as if an attempt were made to expel or force down the uterus itself; and in some instances equal the pains of labour itself. These are much connected also with the state of the bladder, being most severe when it is distended, and generally abat-

(a) A suppression of urine from retroversion of the uterus, may arise at other periods, as well as during a state of pregnancy, and generally from the same cause, viz. over-distention of the bladder. Thus, *after delivery*, the uterus sometimes becomes retroverted, occasioning an entire suppression of urine, and excessive pain; and the same thing, not uncommonly, takes place when the uterus is in a state of disease; and sometimes at the period of life when the catamenia usually cease. At this period the uterus is apt to enlarge and grow heavy, without manifesting any other indications of disease; and in this state more than one instance has occurred of its becoming retroverted.

Dr. Merriman says, that the cases of retroversion of the uterus after delivery, which have fallen under his observation, have principally occurred on the second day after the birth of the child; probably because the degree of contraction, which the womb has by that time undergone, has reduced it to a size the most fit to suffer such a *displacement*. It has happened after easy labours, and notwithstanding the patients have passed their urine once or twice. The second day after delivery has not, however, been invariably the period of this occurrence; for a case occurred to Dr. Merriman, where the patient was attacked with a suppression of urine from this cause on the *ninth* day after delivery. Vide "Merriman's Dissertation on Retroversion of the Womb," p. 19, 20.

* Mr. Pearson relates a case, where the uterus was retroverted, in consequence of being scirrhous. Vide Pearson on Cancer, p. 113. Dr. Marcet gives an instance where the uterus was retroverted, without pregnancy, producing constipation and vomiting. Vide Cooper on Hernia, part II. p. 60. Desault observes, it came by a uterine polypus.

ing in frequency and force, when the urine is evacuated. The acute symptoms produced by the distention of the bladder, or the inability to pass the urine freely, first of all call the attention of the patient to the disease; and when we come to examine her, we find a tumour betwixt the rectum and vagina.* This is formed by the fundus uteri, which is thrown backwards and downwards, whilst the os uteri is directed forward, and sometimes so much upwards, as not to be felt by the finger. This is a disease which we would think cannot be mistaken, and yet it is sometimes difficult to distinguish it; for in extra-uterine pregnancy, it has happened, that the symptoms have been nearly the same with those of retroversion;† and tumour of the ovarium has sometimes produced similar effects. Perhaps the diagnosis cannot, in every case, be accurately made, but this is of less immediate importance, as the indications in such instances must be the same, namely, to draw off the urine, and procure stools.

Retroversion may take place slowly, under two different circumstances, and from two causes, which I will notice in the conclusion of the section. In the one case it takes place more slowly, and it has been said that its progress could be ascertained from day to day;‡ in the other it occurs pretty quickly; and occasionally the woman has been sensible at the time, of a tumbling or motion

* M. Baudelocque relates a case, where the fundus uteri protruded at the os externum, the patient at the same time having violent inclination to expel something. He was, however, able speedily to reduce the womb to the proper state. Vide l'Art, &c. § 125. In Dr. Bell's case, a portion of the rectum was protruded by the uterus. Med. Facts, Vol. VIII. p. 32.

† Vide Mr. Gifford's case in Phil. Trans. Vol. XXXVI. p. 435. and Mr. White's very instructive case, in Med. Comment. Vol. XX. p. 254.

‡ M. Baudelocque gives a case of this kind, § 253. In Dr. Bell's case, as the woman complained for five weeks of dysuria only, it is likely, that for that period, the retroversion was not complete. Med. Facts, Vol. VIII. p. 32. Dr. Hunter supposed that it might take place in various degrees; it might be complete, or semi-complete, or even the os uteri might remain in its natural situation. He says, that Dr. Combe and he saw a case, where the os uteri was pushing out as in a procidentia; but this perhaps, will not be admitted to have been retroversion. Med. Obs. and Inq. Vol. V. p. 388. In the same volume, p. 382, Dr. Garthshore relates an instance of semi-retroversion.

within the pelvis. Sometimes the urine dribbles away involuntarily, or can be passed in small quantity, especially during the commencement of the disease; but often within a few hours, it becomes almost completely obstructed, with pain about the loins, tenderness in the lower belly when it is touched, and a severe bearing-down sensation. The great danger proceeds from the distention* of the bladder, which either bursts† or inflames,‡ and an opening takes place, in consequence of gangrene; or the bladder adheres to the abdominal parietes, its coats becoming thickened and diseased.§ If the urine cannot be drawn off, of which I have never yet met with an instance, and do not believe that such a case can occur; death is preceded by abdominal pain, vomiting, hiccup, and sometimes convulsions. These effects are chiefly produced by mistaking the nature of the complaint. Their duration is variable.‖ Inflammation and gangrene of the vagina and external parts have also been produced. If the disease do not prove rapidly fatal, so much urine escaping as to prevent a speedy termination, it occasionally happens, that the hectic fever is produced. The pulse becomes frequent, the body wastes, and purulent urine is voided;¶

* In the case described by Dr. Hunter, Med. Obs. and Inq. Vol. IV. p. 400, the bladder after death was found to be amazingly distended, but not ruptured.

† In Mr. Lynn's case, the bladder burst, and immediately afterwards the woman miscarried, but the uterus after death was found to be still displaced. Med. Obs. and Inq. Vol. V. p. 388. Dr. Squires relates an instance in which the bladder also gave way. Med. Review for 1801.

‡ In Mr. Wilmer's case, the belly was greatly distended; six pints of urine were drawn off, but the woman soon died. On inspecting the body, the bladder, from the disease of its surface, was found to contain a quantity of coagulated blood, and the inflammation had spread to the colon. In this case the umbilicus was protruded like half a melon, and the disease was at one time taken for hernia. The uterus was found to be so firmly wedged in the pelvis that it could not be raised up till the symphysis pubis was sawed away. Wilmer's Cases, p. 284.

§ In Dr. Ross's patient, after the uterus was reduced, abortion took place; and the woman dying, the bladder was found to be thickened, and adhering to the navel. Annals of Medicine, Vol. IV. p. 284.

‖ Dr. Perfect's patient died thus on the sixth day. Cases in Midwifery, Vol. I. p. 394.

¶ This is illustrated by Dr. Garthshore's patient, who, notwithstanding these symptoms, ultimately did well. After the reduction of the womb she miscarried,

or the person may become œdematous, and the disease pass for dropsy;* occasionally the water is not quite obstructed, but it is voided with difficulty for a week or two, and then the symptoms become more acute, and forcing pains are excited.

Our first object is to relieve the bladder, by introducing a catheter,† which may be slightly curved, the concavity being directed to the sacrum; or we may employ an elastic catheter; but in general, the common instrument succeeds. If it do not pass easily, we may derive advantage from introducing the finger into the vagina, and endeavouring to depress the os uteri, or press back the vaginal tumour.‡ If the catheter cannot be introduced, we have been advised to tap the bladder;§ but this, fortunately, is never requisite.

We must not be deceived with regard to the state of the bladder, by observing that the woman is able to pass a small quantity of water, for it may, nevertheless, be much distended. We must examine the belly, and attend to the sensation produced by pressure on the hypogastric region. Even although the catheter have been employed, only part of the urine may have been drawn off, particularly if the complete evacuation has not been assisted by moderate pressure over the bladder. It has happened, that only so much has been taken away as to give a little relief, and alter the

and fœtid lumps were for some time discharged from the bladder. Med. Obs. and Inq. Vol. V. p. 382.

* In Mr. Croft's case, the disease was of a month's standing, the woman was œdematous, and she was supposed to have dropsy: but by introducing the catheter, seven quarts of urine were drawn off. The introduction was daily repeated for some time, and then occasionally, as circumstances required, for three weeks. The swelling of the legs went off, and the uterus gradually rose. Med. Jour. Vol. XI. p. 381.

† A case is related by Mr. Ford, in which the catheter being allowed to slip into the bladder, produced a sinous ulcer. Med. Facts, Vol. I. p. 96.

‡ In Mr. Hooper's case, whenever the tumour was pressed back, the woman called out that she could now make water. Med. Obs. and Inq. Vol. V. p. 104.

§ This was done by Dr. Cheston. The woman remained long very ill, but she carried her child to the full time, and recovered. Med. Commun. Vol. II. p. 96. In one instance, by using a long trocar, the uterus was wounded, and the woman died.

position of the uterus so much as to lessen the pressure on the orifice of the bladder. In this case, on getting up, a great quantity of urine has flowed spontaneously, and the womb immediately returned to its proper state.

The urine being evacuated, and the most immediate source of alarm being thus removed, we must, in the next place, procure a stool, by means of a clyster; detract blood, if there be fever or restlessness; and give an anodyne injection, if there be strong bearing-down efforts. This is, in general, all that is requisite; and I wish particularly to inculcate the necessity of directing the chief attention to the bladder, which ought to be emptied at least morning and evening, or a gum catheter may be left in the bladder. By this plan, we generally find, that the uterus resumes it proper situation in the course of a short time, perhaps in forty-eight hours;* and the retroversion is seldom continued for more than a week, unless the displacement have been very complete. The precise time, however, required for the ascent of the womb will be determined *ceteris paribus*, by the degree to which it has been retroverted, and the attention which is paid to the bladder. If the fundus be very low, the ascent may be tedious; but I consider myself as warranted from experience to say, that in every moderate degree of retroversion, in every recent case, it is sufficient to empty the bladder regularly without making any attempt to push up the womb. But if the uterine tumour be very low, and near the perineum, it may be necessary, and certainly it is allowable, to endeavour to replace the womb. This is also proper if there be much irritation excited by the state of the womb, and which does not give way to the use of the catheter, and of anodyne clysters. I fear, however, that these efforts are too keenly made, and that often more harm than good is done by them. It may be said, that although the immediate danger be done away by the regular use of the catheter, yet the womb may remain for ever in its malposition, and give rise to

* Dr. Hunter mentions a case, in which the uterus recovered itself immediately after the bladder was emptied. Med. Obs. Vol. IV. p. 408. And in Mr. Croft's second case, the water having been drawn off for six days, the uterus suddenly rose. Lond. Med. Jour. Vol. XI. p. 384.

great difficulty in labour, or to the same event as in extra-uterine pregnancy. I can only reply, that in almost every instance where the bladder has been regularly emptied, the case has done well; and I do believe, that in those where the uterus did not rise spontaneously, very little good could have been done by mechanical efforts.

The attempt to replace the uterus is to be made by introducing the whole hand into the vagina. The uterine tumour is then to be pressed up slowly, firmly, and steadily; and this may sometimes be assisted by elevating the breech of the woman. Forcible and violent attempts are, however, to be strongly reprobated; they give great pain, and may even excite abortion, inflammation, or convulsions. They can only be justified on the principle of preventing a great danger. Now we know that the chief risk proceeds from the distention of the bladder; if, therefore, it can be emptied, the danger is usually at an end. When the retroversion ceases, the uterus usually resumes completely its proper situation; but it sometimes happens, especially if the vagina have been much relaxed, that when the retroversion is removed, the uterus is found very low, forming a prolapsus, which continues for some time. It requires, chiefly, attention to the urine and stools; for it may occupy the pelvis fully, and pretty firmly; and almost the whole fœtus can be felt by the finger through the uterus.

When the uterus ascends, occasionally a little blood is discharged;* but abortion does not take place unless much injury has been sustained. Thus the woman has miscarried quickly after the bladder had burst, as in Mr. Lynn's patient; or when inflammation had taken place, as in the cases related by Drs. Bell and Ross. When this happens, the uterus rises indeed, but the patient is cut off by peritoneal inflammation,† followed by vomiting of dark coloured stuff. Abortion will generally take place, if the liquor amnii have been discharged.

* M. Roger's case, in Act. Havn. Tom. II. art. 17.

† Both Dr. Ross's patient, and Dr. Cheston's patient, the latter of whom recovered, complained of uneasiness in the throat, which Dr. C. considers as a mark of slow peritoneal inflammation.

That the uterus does generally rise spontaneously, if the urine be regularly evacuated, is a fact of which I am fully convinced from my own experience, as well as from the observations of others. But it is nevertheless possible for it to continue in a certain degree of malposition even to the end of gestation.* In this case, the uterus cannot, indeed, at last be said exactly to be retroverted; for it has enlarged so much that it occupies nearly as much of the abdomen as usual; but it has enlarged in a peculiar way, the os uteri being still directed to the symphysis pubis, or even perhaps raised above it. In such a case, which is exceedingly rare, the labour will be very tedious and severe. The os uteri must be very long of being felt, and be first perceived at the pubis.(*b*) We are indebted to Dr. Merriman for an explanation

* This circumstance has been mentioned by different writers, and a distinct case is related by Dr. Merriman, in the Med. and Phys. Jour. Vol. XVI. p. 388. Mrs. F. being about five months pregnant, was suddenly terrified and felt as if her inside were turned upside down. The symptoms, however, were not very acute, for she voided the urine in the last month of gestation, though with pain and some difficulty. On the 16th of June, she had some pains, and a discharge of serous fluid; no os uteri could be felt, but a large semi-globular tumour at the back part of the vagina, bearing down toward the perineum. The pains brought on fever, and at last delirium and convulsions. She was bled, and had a clyster, after which she got some sleep, and the pains continued moderate, though regular, for two or three days, and she passed both urine and stools. On the 20th, nothing like os uteri could be felt; but on the 21st, there was perceived a thick flattened fleshy substance descending into the vagina, and very soon the uterus was restored to its natural situation. The substance was found to be the scalp of the child, containing loose bones. The child and placenta were delivered, and the mother recovered.

(*b*) The first case of this kind that has been accurately stated as such, is to be met with in a small, but judicious work, by Dr. H. S. Jackson, entitled, "Cautions to Women respecting the State of Pregnancy. London, 1798," and was attended by several of the most respectable practitioners of London; the next case which has been made public, was that which fell under the immediate notice of Dr. Merriman, and by him minutely detailed in the London Medical and Physical Journal, for 1806; and afterwards published in a distinct and separate work, entitled, "A Dissertation on Retroversion of the Womb, including some Observations on Extra-uterine Gestation. London, 1810."

It will be found by consulting Dr. Merriman's paper and work above alluded to, that he considers, and with some appearance of probability, that certain of

of this fact, and likewise for the observation that it is possible for the termination to be similar to that of extra-uterine pregnancy, namely, by suppuration. A case of this kind, well marked in all respects, except suppression of urine, is related by Dr. Barnum,* as an instance of extra-uterine gestation. In the fifth month, after some imprudence, the patient had pain accompanied with a dis-

those cases of difficult labour, which by Deventer have been referred to his supposed obliquity of the uterus, and others, which have by different authors, been considered as cases of extra-uterine conception, were, in fact, cases of retroversions of the uterus continuing, in a certain degree, until the full period of utero-gestation, and then impeding delivery. He likewise observes, that it is not unlikely, that some of those cases which are found in Smellie's and other collections, where the os uteri is described as grown together and impervious, were actually retroversions of the uterus. In these cases incisions have been frequently made within the vagina, into the uterus. [Vide Sabatier, Medicine Operatoire, Vol. I. p. 310.]

There is also another class of cases, of which many are recorded by writers on Midwifery, which may probably owe their origin and cause to a retroverted state of the uterus. We here allude to those cases of extra-uterine fœtuses discharged per anum, or through an ulcerated opening in the vagina, after having remained for many years in the abdomen of the mother. [Vide Mainwaring, in 2d Vol. of Transactions of the Society for the Improvement of Med. and Chirurg. Knowledge, and Coleman, in 2d Vol. of Med. and Phys. Journal, and Gifford, in Eclectic Repertory, Vol. I. p. 346, and seq.]

When fœtuses have been found in the cavity of the abdomen entirely disengaged from the uterus, it is probable that a rupture of this viscus, or an ulcerated opening through its parietes, in consequence of its deranged situation, had permitted the escape of the fœtus after it had ceased to live, and not that the conception had advanced to maturity, in a part apparently so illy adapted to such a purpose.

By this explanation, we may solve what has hitherto been to many a difficulty in the history of these cases. It has, for instance, been observed in every case of fœtus, carried, as it was supposed, in the abdomen beyond the period of nine months, that near the usual time of parturition, the pains of labour have regularly come on, and strong efforts appear to have been made by the uterus, as if for the expulsion of the child.

Now, as it has been well observed, it is difficult to assign any reasons for these contractions of the uterus, if the fœtus has no connection with that organ; but if the fœtus is contained in the partially retroverted uterus, or in any of the appendnges of the uterus, the occurrence of these contractions might naturally be expected. Vide Dr. Merriman's paper and work above referred to.

* Vide New York Med. Rep. V. 40.

charge of water and some blood, a mark that the ovum was in the uterus. She got relief at this time; but next month, (Nov.) she had a return of pain, and the os uteri was felt directed to the pubis, and the fundus to the sacrum. All attempts to reduce it failed, suppuration took place, and fœtal bones were discharged by the anus. She died in March.

In order to prevent retroversion, we must understand its cause, which most frequently, if not always, consists in distention of the bladder. But this may take place under two circumstances. First, the uterus may descend lower than usual. Its mouth and cervix fall downward and forward, the fundus lies back in the hollow of the sacrum, and the body is placed obliquely. It is indeed a simple case of prolapsus; but thereby pressure is made on the urinary passage, retention of urine is necessarily produced, the bladder is distended, and thus the os uteri is raised and drawn more forward, and retroversion gradually accomplished. In this case the primary cause is the pressure of the uterus on the urethra or bladder, and the bladder re-acts on the womb. Second, if the female retain the urine too long, the bladder is distended, and from its connection with the uterus, must affect its position, whatever its former state may have been. The os uteri is elevated, and the fundus falls in the same proportion backward. Now in the unimpregnated state, the uterus is not sufficiently large to remain retroverted; and after the fourth month of pregnancy, the uterus is too heavy to be much raised by the bladder, and too large to fall into the pelvis. If, however, the pelvis be very wide, and the uterus have consequently been longer than usual of rising, it may be retroverted at a later period. It would appear, that agitation, or violent exertion,* may cause this state to take place more readily than would otherwise happen; but whether concussion, or other circumstances, can pro-

* In Mr. Bird's case, the accident succeeded to stooping, in washing clothes. Med. Obs. and Inq. Vol. V. p. 100. In Mr. Hooper's case, the woman was frightened by an ox, and in attempting to escape, fell down, after which the symptoms appeared. Mr. Evan's patient ascribed it to lifting a burden. Med. Comment. Vol. VI. p. 215: and Mr. Swan's patient to a fall, p. 217. Dr. Merriman's patient first complained after being suddenly terrified; and Mr. Wilmer's patient had the uterus retroverted, after being fatigued with weeding.

duce retroversion, without some previous distention of the bladder, is not positively proved, though some facts favour the supposition.

Retroversion is sometimes, but not necessarily, followed by abortion. It has no influence in altering the presentation of the child.

The same woman has been known to have the uterus retroverted in two successive pregnancies.* Retroversion may also take place after delivery.

§ 34. ANTIVERSION.

The uterus is also said to be sometimes antiverted, that is, the fundus is thrown forward, so as to compress the neck of the bladder, and its mouth is turned to the sacrum.† Of this accident I have never seen an instance, and, from the nature of the case it must be very rare. The urine should be evacuated, and the fundus raised up. The symptoms are described to be, weight in the lower part of the belly, a desire to make water, but difficulty in doing so, the existence of a tumour near the pubis, and an impediment to the passage of the fæces.

§ 35. RUPTURE OF UTERUS.

Rupture of the gravid uterus may take place at any period of gestation. The moment of the accident is generally marked by severe pain, occasionally by vomiting, and frequently by a tendency to syncope, which, in some instances, continues for a length of time to be the most prominent symptom.‡ The pain sometimes resembles labour, but more frequently colic, and its duration is va-

* Vide case by Dr. Senter, in Trans. of Phys. at Philadelphia, p. 130. Both times it was reduced by the hand.

† Vide Chambon, Malad. de la Grossesse, p. 16. M. Baudelocque relates a case from the practice of Choppart, where it was produced in the second month of pregnancy, by the action of an emetic. L'Art, &c. § 255. Levret notices a case where the disease was mistaken for calculus, and the operation of lithotomy actually performed. Journ. de Med. T. IV. p. 269.

‡ Vide Dr. Underwood's case, in Lond. Med. Journ. Vol. VII. p. 321.

riable. In some cases, hemorrhage takes place from the vagina, but the greatest quantity of the blood* flows into the abdomen. At the time of the accident, and for a little thereafter, the child is felt to struggle violently. Then the motion ceases, the woman feels a weight in the belly, and, if the pregnancy be far advanced, the members of the child can be traced through the abdominal parietes.† The tumour of the belly generally‡ lessens, and milk is secreted, indicating the death of the child.

If hemorrhage, or peritoneal inflammation, do not quickly carry off the patient, we find, that at the end of some time, occasionally of the ninth month of gestation, pains like those of labour come on, which either gradually go off, and the child is retained for many years,§ being inclosed in a kind of cyst; or inflammation and abscess take place, and the child is discharged piece-meal.‖

In some instances, it would appear, that the ovum may be expelled entire into the abdomen; and in that case, it is possible for

* Sometimes the hemorrhage proves fatal. A singular case is to be met with in Medical Facts, Vol. III. p. 171, by Canestrini, where the woman had a double uterus. One of the uteri, after some pains, burst in the fourth month. The ovum was found entire in the abdomen, and much blood was effused.

† A twin case is related by Dr. J. Hamilton, where the uterus was so thin, that even the sutures of the head could be felt through the abdominal parietes. Violent pains were produced by the motion of the child, the uterus felt very light, and the woman had been exposed to a degree of violence. This case had a very considerable resemblance, in some respects, to a ruptured uterus, but she was delivered safely of two children. Cases, p. 124.

‡ Sometimes the tumour rather increases. In Dr. Percival's case, the belly became much larger after the accident, and continued so for about a year. Then it subsided all at once, when the woman was in a recumbent posture. Med. Comment. Vol. II. p. 77.

§ In Dr. Percival's case the fœtus was retained for 22 years, and then discharged by the rectum.

‖ Dr. Drake's case, where the uterus seemed to burst in the fourth month, terminated by suppuration at the navel. Excrement was for some time discharged at the opening. Phil. Trans. Vol. XLV. p. 121.—A washerwoman at Brest had the uterus ruptured by a fall in the seventh month, and ultimately expelled the fœtus at the navel. Mem. of Acad. of Sciences for 1709.—Guillerm, in the same work, for 1706, mentions a woman who had the womb ruptured by a fall in the sixth month. She immediately fainted, and a discharge took place from the vagina. The child was expelled by the anus.—See also the cases by Dr. Percival, Mr. Wilson, &c.

the child to live for some time, and even to grow, although out of the uterus. When this happens, its motions are felt more freely and acutely than formerly. As the os uteri opens a little after the expulsion, and a sanguineous discharge takes place, the woman has sometimes been supposed to miscarry. If she survive, the womb slowly decreases in size, and returns to the unimpregnated state,* which will assist materially in the diagnosis, between this and extra-uterine pregnancy existing from the first. The menses return, and though the belly does not subside completely, yet the person continues tolerably well, unless inflammation come on. She may even bear children before the extra-uterine fœtus be got rid of.† If the case is to prove fatal, the pulse becomes quick and

* In the Journ. de Med. for 1780, there is a case of a woman, who had the uterus ruptured in the fourth month of pregnancy. The accident was followed by uterine hemorrhage, which continued for some time. The menses returned, but the belly did not subside. In the ninth month she died. The uterus was found of the natural size, but the rent was still perceptible.

The uterus for some time does not return to its unimpregnated state, as is evident from the following case, which I lately saw. Anne Neilson, aged 24 years, fell on the ground about a month before this note was written, being then in the ninth month of her first pregnancy. She felt at the time as if something had burst near the navel, and perceived more fluttering of the child than usual. This continued in a certain degree for two days, after which she felt no more motion. In the course of two or three days after the accident, she was seized with irregular pains, chiefly about the belly, and these are rather increasing than diminishing in severity. The belly has subsided considerably in size, is hard, particularly above the navel, toward the stomach. The umbilicus itself is soft and prominent. The bowels are regular, urine proper, tongue clean, heat natural, pulse 84, has occasional shivering On examining, per vaginam, the lower part of the uterus is felt soft and tubulated, very unlike either the gravid or unimpregnated womb. It hangs into the vagina, like a fleshy inverted cone. By some degree of attention the os uteri is discovered at the lower part, or rather a little backward. It has no distinct projecting lips as in the unimpregnated state, but by pressure with the finger, the aperture is felt with thin margins, and the point of the finger may be introduced a very little way within it. The head of the child is discovered between the uterus and pubis. No distinct member can be felt through the abdominal parietes.

Dr. Jeffray possesses a preparation of a fœtus contained in a kind of cyst taken from a woman who had carried the child above twenty years: the rupture was occasioned by a fall.

† Vide Journ. de Med. Tom. V. p. 422.

small, the belly painful, the strength sinks, and sometimes continued vomiting ushers in dissolution.*

Rupture of the uterus may be the consequence of mental agitation,† but in most cases it is owing to external violence.‡

Three modes of treatment present themselves, when the uterus is ruptured during gestation, and previous to labour. To leave the case to nature; to deliver *per vias naturales;* and to perform the cæsarean operation. To dilate the os uteri forcibly, and thus extract the child, is a proposal so rash and hazardous, that I know

* In the Journal de Med. for 1780, a case is detailed of a woman, who, in the month of January, being then seven months pregnant, was squeezed betwixt the wall and a carriage, and had the uterus ruptured. She instantly felt violent pain in the belly, and a discharge took place from the vagina, which continued in variable quantity for six weeks. The strength gradually sunk, and in June she began to vomit, and continued to do so for several days, when she died. The abdomen was found inflamed, and contained the remains of a putrid child. The rent was visible in the womb.

† Dr. Percival's patient attributed her accident to a fright; Dr. Underwood's referred hers to mental agitation.

‡ In Mr. Wilson's patient, the accident was produced by being kicked. She complained of pains all night after the injury, and next day had a sanguineous discharge from the vagina, and soon afterwards was attacked with violent griping pain. The fœtus was ultimately discharged by an abscess, bursting externally. Annals of Med. Vol. II. p. 317, and Vol. VI. p. 401.—Dr. Garthshore's patient ascribed it to violent exercise. Med. Journal, Vol. VIII. p. 334.—Mr. Goodsir's patient to exertion. Annals of Med. Vol. VII. p. 412.—In the 5th and 6th volume of the Journal de Med. are two cases, the first produced by a fall from a tree, the second by a bruise from a wagon. Other instances, if necessary, might be added.

The uterus may be ruptured by a variety of causes—

1. By external violence, as by blows, falls, pressure, &c.

2. By rude attempts to turn the child, and especially, after the waters are discharged. This has often happened.

3. By convulsions.

4. By the inordinate action of the uterus, constituting what is termed *spontaneous rupture.* This last is, by much, the most common cause. But when rupture is thus produced, we may suspect that an improper treatment has been pursued. We can, undoubtedly, by copious bleeding, and the subsequent administration of opium, so far overcome the *resistance*, and mitigate the *violence of the pains*, as to prevent its occurrence. The same remedies will, moreover, obviate, in most instances, rupture from convulsions; and should never be neglected as precautionary means, where there are any apprehensions of the accident from turning the child. C.

none in the present day who would adopt it. I question if the woman could live till the delivery were accomplished. The cæsarean operation is safer, and in every respect preferable; but we cannot yet, from experience, determine its advantages, and certainly it ought not to be performed, unless we can thereby save the child, or the patient have reached a very advanced period of pregnancy. The third proposal, therefore, to leave the case to nature, like an extra-uterine pregnancy, is most likely to be successful, more especially when the rupture happens in the early months of gestation. We find, from the result of cases, that the patient has the best chance of recovery, if we are satisfied with obviating symptoms, and removing inflammation in the first instance; and supporting the strength of the patient through the progress of the disease, should it not prove rapidly fatal; enjoining rest, giving mild diet, and favouring the expulsion of the bones, by poultices and fomentations. and, if necessary, by enlarging the abscess, if it point externally.*

* This *negative sort of practice* has, undoubtedly, met with many very respectable advocates. There are, at the present day, several eminent practitioners, besides Mr. Burns, who strenuously recommend it. Notwithstanding, however, the weight of authority in its favour, I cannot believe it to be right. The powers of nature seem to me to be totally incompetent in such cases. By prompt delivery only we can hope to do good. This, then, we should always attempt. In some cases the forceps may be used, but they are few, as the rupture commonly takes place before labour is sufficiently advanced to admit of their application. We, therefore, turn the child, and bring it away by the feet. Delivery in this manner has been more than once effected, and the woman preserved, even where the child had escaped through the rupture of the uterus into the abdominal cavity. I allude now more particularly, to the case recorded by Dr. Douglass, and to one which occurred to Dr. J. Hamilton. To these, I may also add, as showing, at least, the practicability of delivery under such circumstances, a case, related by my friend Dr. James, in the Medical Repository of New York.

Were the rupture to happen in the earliest stage of labour, I should nevertheless not be deterred from adopting this practicc. I would forcibly, but not violently, dilate the uterus. It does not strike me that the attempt would be "rash and hazardous." We often in other emergencies do it with advantage, as in labour attended with hemorrhage or convulsions. Why may it not also be done in lacerated uterus?

But if, by deformity of the pelvis, or contraction of the uterus, (the child being in the cavity of the abdomen) or indeed from any other circumstances, there exists insuperable impediments to delivery *per vias naturales*, I would, without hesi-

The uterus, sometimes, in the early months of gestation, is opened by a kind of ulcer, and, occasionally, by a species of slough; either of which states proceeds from previous disease in a part of the womb. There may be pain attending this process; but in such instances as I have known, there has been none. The patient, without any evident cause, has been seized with great sickness, and fits of fainting, which, in a few hours have proved fatal. On examination, there will be found much blood effused in the pelvis or cavity of the abdomen, and perhaps a fœtus amongst the clots.

§ 36. ABORTION AND TREATMENT OF PREGNANT WOMEN.

The usual period of utero-gestation is nine months, but the fœtus may be expelled much earlier. If the expulsion take place within three months of the natural term, the woman is said to have a premature labour; if before that time, she is said to miscarry, or have an abortion. The process of abortion consists of two parts, detachment and expulsion; but these do not always bear a uniform relation to each other in their degree. The first is productive of hemorrhage, the second of pain; for the one is attended with rupture of vessels, the other with contraction of the muscular fibres. The first may exist without being followed by the second, but the second always increases, and ultimately completes the first. The

lation, resort to the *cæsarean section*. In deliberating on the expediency of adopting this dreadful alternative, we should constantly bear in recollection that we are not without examples of the success of the operation.

Two cases with favourable results are related, one by Dr. Barlow, and the other by Dr. J. Hamilton. In the latter case, the bones of the pelvis were so mashed by the wheel of a cart as altogether to prevent delivery by the natural passages. On opening the abdomen, the child was found in the cavity, and the uterus considerably lacerated. But notwithstanding the extent and severity of the injury, the woman entirely recovered.

Let it not, however, be understood that I am at all sanguine as regards the two remedies which I have proposed. I am, on the contrary, persuaded that in most instances, they will wholly fail. But what else can be done in these tremendous cases? To leave them to nature, "*like an extra-uterine conception*," would be, either to consign the woman to immediate death, or what is still worse, to death from protracted and torturing illness. C.

symptoms then of abortion, must be those produced by separation of the ovum, and contraction of the uterus. To these, which are essential, may be added others more accidental, induced by them, and varying according to the constitution and habits of the patient.

The ovum may be thrown off at different stages of its growth; and the symptoms, even at the same period, vary in duration and degree. The process of gestation may be checked, even before the fœtus or vesicular part of the ovum has descended into the uterus, or, at least, can be readily detected, and when the decidua only is formed. In this case, which occurs within three weeks after impregnation, the symptoms are much the same with those of menorrhagia. There is always a considerable, and often a copious discharge of blood, which coagulates or forms clots. This is accompanied with marks of uterine irritation, such as pain in the back and loins, frequently spasmodic affections of the bowels, and occasionally a slight febrile state of the system. In plethoric habits, and when abortion proceeds from over-action, or hemorrhagic action of the uterine vessels, the fever is idiopathic, and precedes the discharge. In other circumstances it is either absent, or, when present, it is symptomatic, and still more inconsiderable, arising merely from pain or irritation. As the deciduous vessels are very small, and are soon displaced, they cannot be detected in the discharge. Nothing but coagulum can be perceived; and this, as in other cases of uterine hemorrhage, is often so firm, and the globules and lymph so disposed, as to give it, more especially if it have been retained for some time about the uterus or vagina, a streaked or fibrous appearance, which sometimes gives rise to a supposition, that it is an organized substance.

The only interruption to the discharge in this case of abortion, proceeds from the formation of clots, which, however, are soon displaced. Women, if plethoric, sometimes suffer considerably from the profusion of the discharge; but, in general, they soon recover.

If the ovum have descended into the uterus, and acquired the size of a nut, the symptoms are somewhat different. We have an attempt in the uterus to contract, which formerly was not necessa-

ry; we have pains more or less regular in the back and hypogastric region; we have more disturbance of the abdominal viscera, particularly the stomach. The discharge is copious, and small bits of fibrous substance can often be observed. Sometimes the vesicle may be detected in the first discharge of blood, and will be found to be streaked over with pale vessels, giving it an appearance as if it had been slightly macerated. When all the contents are expelled, a bloody discharge continues for a few hours, and is then succeeded by a serous fluid. At this time, and in later abortion, if the symptoms take place gradually, we may sometimes observe a gelatinous matter to come away before the hemorrhage appears.

If the uterus contain more vascular and organized matter, as in the beginning of the third month, the vesicle never escapes first; but we have for some time a discharge of blood, accompanied or succeeded by uterine pain. Then the inferior part or short stalk of the ovum may be expelled, gorged with blood, and afterwards the upper part equally injured. Sometimes the whole comes away at once and entire; but this is rare. As considerable contraction is now required in the uterus, the pains are pretty severe. The derangement of the stomach is also greater than formerly, giving rise to sickness or faintness, which is a natural contrivance for abating the hemorrhage.

When the membranes come to occupy more of the uterus, and a still greater difference exists betwixt the placenta and decidua, we have again a change of the process; we have more bearing-down pain, and greater regularity in its attack; we have a more rapid discharge, owing to the greater size of the vessels; but there is not always more blood lost now than at an earlier period, for coagula form readily from temporary fits of faintness, and other causes, and interrupt the flow until new and increased contraction displaces them. Often the membranes give way, and the fœtus escapes with the liquor amnii, whilst the rest of the ovum is retained for some hours or even days,* when it is expelled with coagulated

* In all cases the placenta is retained much longer after the expulsion of the child in abortion, than in labour at the full time.

blood separating and confounding its different parts or layers. Retention of the secundines, when accompanied with considerable or repeated hemorrhage, very generally is dependent on, or connected with, spasmodic contraction of the uterus, which embraces a very small bit of the upper part of the placenta. At other times the fœtal and maternal portions separate, and the first is expelled before the second, forming a very beautiful preparation. In some rare instances we find the whole ovum expelled entire, and in high preservation. After the expulsion, the hemorrhage goes off, and is succeeded by a discharge, somewhat resembling the lochia.

In cases of twins, after one child is expelled, either alone or with its secundines, the discharge sometimes stops, and the woman continues pretty well for some hours, or even for a day or two, when a repetition of the process takes place, and if she has been usiug any exertion, there is generally a pretty rapid and profuse discharge. This is one reason, amongst many others, for confining women to bed for several days after abortion.

There is frequently, for a longer or shorter time before the commencement of abortion, a pain and irregular action in the neighbouring parts, which give warning of its approach, before either discharge or contraction takes place ;* unless when it proceeds from violence, in which case the discharge may instantly appear. This is the period at which we can most effectually interfere for the prevention of abortion. I need not be particular in adding, that we are not to confound these symptoms with the more chronic ailments which accompany pregnancy.

A great diversity obtains in different instances with regard to the symptoms and duration of abortion. In some cases the pains are very severe and long continued; in others short and trifling; nor is the degree of pain always a correct index of the force of contraction. Sometimes the hemorrhage is profuse† and alarming; at other times, although circumstances may not be apparent-

* In some cases, shooting pains and tension are felt in the breasts before abortion, and the patient is feverish.

† Those who are plethoric generally lose much blood, unless the contraction have been brisk. In some cases six or seven pounds of blood have been lost in a few hours.

ly very different, it is moderate or inconsiderable. Often the sympathetic effects on the stomach and bowels are scarcely productive of inconvenience, whilst in a greater number of instances they are very prominent symptoms.

I may only add, that, *cæteris paribus*, we shall find, that the farther the pregnancy is advanced beyond the third month, and the nearer it approaches to the end of the sixth, the less chance is there of abortion being accompanied, but the greater of its being succeeded by nervous affection.

As there is a diversity in the symptoms, so is there also in the duration of abortion; for, whilst a few hours in many, and not above three days in the majority of cases, is sufficient to complete the process, we find other instances in which it is threatened for a long time, and a number of weeks elapse before the expulsion take place.

In some cases the child appears to be dead for a considerable time before the symptoms which accompany expulsion occur. But in a great majority of cases it is living, when the first signs of abortion are perceived, and in some instances is born alive. The signs by which we judge that the child in utero is dead, are the sudden cessation of the morning sickness, or of any other sympathetic system which may have been present. The breasts become flaccid. If milk had been formerly secreted, it sometimes disappears, but in other instances the contrary happens, and no evident secretion takes place until the action of gestation, or at least the life of the child be lost. In almost every case, however, the breasts will be found to have lost their firmness. If the pregnancy had advanced beyond the period of quickening, the motion of the child will be lost, and a feeling of heaviness will be felt about the pelvis. When all these signs are observed, and when they are followed by discharge, and especially when this is attended with pain, there can be no doubt that expulsion will take place, and it would be improper to prevent it. We are not, however, to conclude that the child is dead, merely because it does not move; and when abortion is threatened before the term of quickening, this sign cannot enter into our consideration.

When the ovum perishes at a very early period, and is not immediately discharged, we find that the sympathetic signs of pregnancy disappear, and not unfrequently a serous or milky fluid comes from the nipples. The woman feels languid and hot at night, or has fits of sickness, or hysterical symptoms; a discharge of fœtid dark coloured fluid takes place from the vagina, and is often mixed with particles like snuff. This continues till all the remains of the ovum have come away, and then the health and spirits are restored.

If, at a more advanced period, the ovum remain after the child dies, it is converted either into a mole or hydatids; and this may also happen even at a very early stage of pregnancy. These cases have already been considered. It is generally most prudent to obviate symptoms, and wait until the os uteri open and pains come on. Then we are to be directed by existing circumstances. Whether the ovum becomes putrid, or undergo a change into hydatids, it is reasonable to expect that the vessels of the uterus, being no longer employed in the growth of the fœtus, should diminish, and become, in the first case, merely sufficient to nourish the uterus; and, in the second, to apply the necessities of the substance attached to the inner surface of the womb; for there is a communication between them, and a discharge of blood attends the expulsion of either a mole or hydatids; whereas, on the other hand, if the ovum has perished completely and become putrid, the discharge is rather a fœtid sanies than red blood.

Abortion may very properly be divided into accidental and habitual. The exciting causes of the first class may, in general, be easily detected; those giving rise to the second are often more obscure; and, without great attention, the woman will go on to miscarry, until either sterility, or some fatal disease, be induced.

In many cases, there can be no peculiar predisposing cause of abortion; as, for instance, when it is produced by blows, rupture of the membranes, or accidental separation of the decidua; but when it occurs without any very perceptible exciting cause, it is allowable to infer, that some predisposing state exists; and this frequently consists in an imperfect mode of uterine action, induced by age, former miscarriages, and other causes. It is well known,

that women can only bear children until a certain age; after which, the uterus is no longer capable of performing the action of gestation, or of performing it properly. Now, it is observable, that this incapability or imperfection takes place sooner in those who are advanced in life before they marry, than in those who have married and begun to bear children earlier. Thus we find, that a woman who marries at forty, shall be very apt to miscarry; whereas, had she married at thirty, she might have born children when older than forty; from which it may be inferred, that the organs of generation lose their power of acting properly sooner, if not employed, than in the connubial state. The same cause which tends to induce abortion at a certain age in those who have remained until that time single, will also, at a period somewhat later, induce it in those who have been younger married; for in them we find, that, after bearing several children, it is not uncommon to conclude with an abortion; or, sometimes after this incomplete action, the uterus, in a considerable time, recruits, as it were, and the woman carries a child to the full time, after which she ceases to conceive.

In the next place, I mention that one abortion paves the way for another; because, setting other circumstances aside, it gives the uterus a tendency to stop its action of gestation at an early period after conception, and therefore it is difficult to make a woman go to the full time, after she has miscarried frequently. This fact has also been explained upon the principle of repeated abortion weakening the uterus,* and this certainly may have some influence. The renewed operation of those causes which formerly induced abortion, may likewise account in many cases for its repetition. But I am also inclined to attribute the recurrence, sometimes, to habit alone, by which I understand that tendency which a part has to repeat or continue those modes of acting which it has frequently performed, as we see in many diseases of the stomach and windpipe; spasmodic affections of these and other organs, being apt to

* Per hanc vero consuetudinem nihil aliud intelligo, quam pravam vasorum uteri laxitatem et inde provenientem humorum stagnationem, ex abortiendi labore sæpius repetito inductam." Hoffman, Tom. iii. p. 180.

return at the same hour, for a long time. With regard to the uterus, one remarkable instance is related by Schulzius, of a woman, who, in spite of every remedy, miscarried twenty-three times at the third month. In this, and similar cases, slighter causes applied at the period when abortion formerly happened, will be sufficient to induce it, than would be required at another time.

We also find that an excessive or indiscriminate use of venery, either destroys the power of the organs of generation altogether, making the woman barren, or it disposes to abortion, by enfeebling these organs.

Some slight change of structure in part of the uterus, by influencing its actions, may, if it do not prevent conception, interfere with the process of gestation, and produce premature expulsion. If, however, the part affected be very small, and near the os uteri, it is possible for pregnancy to go on to the full time. Indeed, it generally does go on, and the labour, as may be foreseen, will be very tedious; but the operation of cutting the indurated os uteri, which has been proposed, is seldom necessary. I have known one instance, in which a very considerable part of the uterus, I may say almost the whole of it, was found, after delivery, to be extremely hard, and nearly ossified: but this state could not have existed before impregnation took place, for I cannot conceive that so great a proportion of the uterus should have been originally diseased, and yet that conception, and its consequent actions, should take place; but there is less difficulty in supposing that, during the enlarging of the uterus, the vessels deposited osseous or cartilaginous matter, instead of muscular fibres.

A general weakness of the system, which must affect the actions of the uterus, in common with those of other organs, is likewise to be considered as giving rise to abortion, though not so frequently as was at one time supposed.

A local weakness of the uterus sometimes exists when the general system is not very feeble; or when the constitution is delicate, the uterus may be weaker in proportion than other organs. In this case, it cannot perform its function with the necessary activity and perfection, but it is very apt, after a time, to flag. We cannot operate with medicines directly upon the womb, for the

purpose of strengthening it, but must act on it by invigorating the general system, and attending to all the other functions. Sea-bathing is of great service; and after impregnation, every exciting cause of abortion must be guarded against. Women of this description are generally pale, of a weakly, flabby habit, and subject to irregular, often to copious menstruation, or fluor albus. When they conceive, the cold bath, light, digestible food, open bowels, and free air, should be enjoined; and if any uneasy sensation be felt about the uterus or back, or the pulse throb, a little blood should be slowly taken away, and the woman keep her room for some days. Bleeding prevents the womb from being oppressed, and it is as necessary to attend to this, as it is to prevent the stomach from being loaded in a dyspeptic patient. But, on the other hand, were we to bleed copiously, we might injure the action of the uterus, and destroy the child.

It has been supposed that abortion might arise from a rigidity of the uterus, which prevented its distention. But the uterus does not distend like a dead part, upon which pressure is applied, but it grows, and therefore I apprehend that an effect is here considered as a primary cause.

The uterus is not only affected by the general conditions of the system, more especially with regard to sensibility, and the state of the blood vessels; but it likewise sympathizes with the principal organs, and may undergo changes in consequence of alterations in their state.

Thus we often find that loss of tone, or diminished action of the stomach, produces amenorrhœa; and it may also on the same principle induce abortion; on the other hand, the action of the uterus may influence that of other viscera, as we see in pulmonary consumption, which is sometimes suspended in its progress during pregnancy; or, if there be any disposition in an organ to disease, frequent abortion, partly by sympathy betwixt the uterus and that organ, and partly by the weakness which it induces, and the general injury which it does to the system at large, may excite the irregular or morbid action of the organ so disposed.

As the action of the uterus is increased during pregnancy, it must require more nervous energy; but the size of the nerves of

the uterus is not increased in proportion to the action; we must therefore depend for the increased supply upon the trunks, or larger portion of the nervous substance, from which they arise; for we well know that the quantity of energy expended in an organ, does not depend upon the size of the nerve in its substance, but on the trunk which furnishes it. Whenever action is increased in an organ, it must either perish, or the larger nerve must send the branches more energy; for the branches themselves cannot form it, their extremities being only intended for expending it; from which it follows, that in pregnancy there must be more energy sent to the uterus, and less to some other part.

This is the case with all organs whose action is increased, other parts being deprived in proportion as they are supplied, except when irritation raises general action above the natural degree; the consequence of which is that the power is not sufficient for the action, which becomes irregular, and the system is exhausted, as we see in febrile conditions.

There being increased action of the uterus in gestation, requiring an increased quantity of energy to support it, we find that the system is put *pro tempore* into an artificial state, and obliged either to form more energy, which cannot be so easily done, or to spend less in some other part. Thus the function of nutrition, or the action by which organic matter is deposited, in room of that which is absorbed, often yields, or is lessened, and the person becomes emaciated, or the stomach has its action diminished, or the bowels, producing costiveness and inflation. If no part give way, and no more energy than usual be formed, gestation cannot go on, or goes on imperfectly. Hence some women have abortion induced by being too vigorous; that is to say, all the organs persist in keeping up their action in perfection and complete degree.

A tendency to abortion also results from a contrary cause, from organs yielding too readily, allowing the uterus to act too easily. In this state it is as liable to go wrong, as the general system is when it is at the highest degree of action compatible with health; the most trifling cause deranges it. Thus, sometimes, the intestines yield too readily, and become almost torpid, so that a stool can with difficulty be procured. Here costiveness is not a cause

of abortion, though it may be blamed. In like manner, the muscular system may yield and become enfeebled; and in this instance, debility is accused as the cause of abortion, although it be, indeed, only an effect of too much energy being destined for the uterus. In this case, the woman is always weaker during menstruation and gestation than at other times.

If the neighbouring parts do not accommodate themselves to the changes in the direction of energy, and act in concert with the uterus, their action becomes irregular, and consequently painful. In this case, the uterus may have its just degree of power and action; but other parts may not be able to act so well under the change of circumstances. This is chiefly the case in early gestation, for, by time, the parts come to act better. It often gives rise to unnecessary alarm, being mistaken for a tendency to abortion; but the symptoms are different. The pain is felt chiefly at night, a time at which weakened parts always suffer most; it returns pretty regularly for several weeks, but the uterus continues to enlarge, the breasts to distend, and all things are as they ought to be, if we except the presence of the pain. This may be alleviated by bleeding, and sometimes by anodynes; but can only be cured by time, and avoiding, by means of rest and care, any additional injury to parts already irregular and ticklish in the performance of their actions. If this be neglected, they will re-act on the uterus at last, and impede its function. It is therefore highly necessary, especially in those disposed to abortion, to pay attention to pains about the back, loins, or pubis; and to insist upon rest, open bowels, and detracting blood, if the state of the vascular system indicate evacuation.

Even although the different organs, both near and remote, may have accommodated themselves to the changes in the uterine action, in the commencement of gestation, the proper balance may yet be lost at a subsequent period; and this is most apt to take place about the end of the third, or beginning of the fourth month, before the uterus rises out of the pelvis: and hence a greater number of abortions take place at that time than at any other stage of pregnancy. There is from that time to the period of quickening, a greater susceptibility in the uterus to have its action interrupted,

than either before or afterwards; which points out the necessity of redoubling our vigilance in watching against the operation of any of the causes giving rise to abortion from the tenth to the sixteenth week.

If the action of gestation go on under restraint, as for instance, by a change of position in the uterus, or by its prolapsing too low in the vagina, it is very apt to be accompanied by uneasy feelings, for, whenever any action is constrained, sensation is produced. The woman feels irregular, and pretty sharp pain in the region of the uterus, and from sympathetic irritation both the bladder and rectum may be affected, and occasionally a difficulty is felt in making water, by which a suspicion is raised that retroversion is taking place. Sometimes the cervical vessels in these circumstances yield a little blood, as if abortion were going to happen; but by keeping the patient at rest, and attending to the state of the rectum and bladder, no harm is done; and when the uterus rises out of the pelvis, no farther uneasiness is felt. Occasionally a pretty considerable discharge may take place under these circumstances, if the vascular system be full, or the vessels about the cervix large. But, by care, gestation will go on; for discharge alone does not indicate that abortion must necessarily happen. It, indeed, often causes abortion, and is almost always an attendant upon it; but we form our judgment, not from this symptom alone, but also from the state of the muscular fibres, and the vitality of the child.

Retroversion of the uterus likewise constrains very much its action, and may give rise to abortion, though in a greater number of instances, by care, gestation will go on, and the uterus gradually ascend. The bowels are to be kept open, and the urine regularly evacuated.

Sometimes in irritable or hysterical habits, the process of gestation produces a considerable degree of disturbance in the actions of the abdominal viscera, particularly the stomach; exciting frequent and distressing retching or vomiting, which may continue for a week or two, and sometimes is so violent, as to invert the peristaltic motion of the intestines near the stomach, in which case feculent matter, and, in some instances, lumbrici are vomited.

This affection is often accompanied by an unsettled state of

mind, which adds greatly to the distress. We sometimes, in these circumstances, have painful attempts made by the muscles to force the uterus downward, and these are occasionally attended by a very slight discharge of blood. We have, however, no regular uterine pain; and if we are careful of our patient, abortion is rarely produced.

The best practice is to take away a little blood at first, to keep the bowels open, to lessen the tendency to vomit, by applying leeches, or an opium plaster, or a small blister, to the region of the stomach, and to allay pain by doses of hyoscyamus or opium, conjoined with carminatives. When the mind is much affected, or the head painful, it is proper to shave the head, and wash it frequently with cold vinegar, or apply leeches to the temples; at the same time we keep the patient very quiet, and have recourse to a soothing management.

The uterus being a large vascular organ, is obedient to the laws of vascular action, whilst the ovum is more influenced by those regulating new-formed parts; with this difference, however, that new-formed parts or tumours are united firmly to the part from which they grow by all kinds of vessels, and generally by fibrous or cellular substance, whilst the ovum is connected to the uterus only by very tender and fragile arteries and veins. If, therefore, more blood be sent to the maternal part of the ovum, than it can easily receive and circulate and act under, rupture of the vessels will take place, and an extravasation and consequent separation be produced; or, even when no rupture is occasioned, the action of the ovum may be so oppressed and disordered, as to unfit it for continuing the process of gestation. There must, therefore, be a perfect correspondence betwixt the uterus and the ovum, not only in growth and vascularity, but in every other circumstance connected with their functions.

Even when they do correspond, if the uterus be plethoric, the ovum must also be full of blood, and rupture is very apt to take place. This is a frequent cause of abortion, more especially in those who menstruate copiously. On the other hand, when the uterus is deficient in vascularity, which often happens in those who menstruate sparingly or painfully, or who have the menses pretty

abundant, but watery, the child generally dies before the seventh month, and is expelled. The process is prematurely and imperfectly finished.

The existence of plethora is to be considered as a very frequent cause of abortion, and requires most particular attention. It more especially obtains in the young and vigorous, or in those who live luxuriously, and sleep in soft warm beds. It renders the uterus too easily supplied with blood: the increase is not made in the regular degree, corresponding to the gradual increase of action, and augmentation of size; but it is, if I may use the expression, forced on the uterus, which is thus made for a time to act strongly and rapidly. This action is sometimes so great, that the person feels weight in the region of the uterus, and shooting pains about the pelvis; but, in other instances, the vessels suddenly give way, without previous warning, and the blood bursts forth at the os uteri. This cause is especially apt to operate in those who are newly married, and who are of a salacious disposition, as the action of the uterus is thus much increased, and the existence of plethora rendered doubly dangerous. In these cases, whenever the menses have become obstructed, all causes tending to increase the circulation must be avoided, and often a temporary separation from the husband is indispensable. Often do we find that slight exertion, within a fortnight after the menses stop, will produce a speedy and violent eruption of blood, which continues until the vessels are fully unloaded, and until all that part of the process of forming an ovum which has been affected, be undone.

Abortion necessarily implies separation of the ovum, which may be produced mechanically, or by spontaneous rupture of the vessels, or by an affection of the muscular fibres. It unavoidably requires, for its accomplishment, contraction of those fibres which formerly were in a dormant state. A natural and necessary effect of this contraction is to develop the cervix uteri. This, when gestation goes on regularly, is accomplished gradually and slowly by the extension and formation of fibres. In abortion no fibres are formed; but muscular action does all, except in those instances where the action of gestation goes on irregularly and too fast; in which case, the cervix distends, sometimes by the third month, by

the same process which distends the fundus. But much more frequently the cervix only relaxes during abortion, as the os uteri does in natural labour, and yields to the muscular action of the fundus, or distended part.

The existence and growth of the fœtus depend on the fœtal portion of the ovum. The means of nourishment, and the accommodation of the fœtus in respect of lodgment, depend on the uterus; and these circumstances requiring both fœtal and maternal action, are intimately connected. The condition of the uterus qualifying it to enlarge, to continue the existence and operation of the maternal portion of the placenta or ovum, and to transmit blood to the ovum, exactly in the degree correspondent to its want, constitutes the action of gestation. When the action of gestation ceases universally in the uterus, another action, namely, muscular contraction, begins, and then all hope of retaining the ovum any longer is at an end. I know that we have been told of instances where contraction, after beginning, stopped for several weeks. The os uteri may be prematurely developed; it may be open for some weeks, even without pain; but no man will say that, in this case, labour or uterine contraction has begun. We may even have partial muscular action, in a few cases, about the os uteri, which has less to do with the action of gestation than any other part of the uterus; and this action is often attended with considerable pain or uneasiness. Sometimes it is connected with convulsive agitation of several of the external muscles of the body. Even in this case, expulsion does not always immediately take place; for by bleeding, and rest, and opiates, the motion may sometimes be checked; but regular and universal action of the muscular fibres never yet has been stopped. It may, like other muscular actions, be suspended by anodynes or artificial treatment; but it never has, and never can be stopped, otherwise than by the expulsion of the ovum, when a new train of actions commence. Whenever, then, at any period of pregnancy, we have paroxysms of pain in the back,* and region of the uterus,

* It may not be improper to mention, that in some febrile affections we have pain in the back and loins, occasionally remitting or disappearing altogether for a short space, and then returning. Sometimes along with this we have, owing to the affection of the circulation, and in some instances, to previous exertion, a

more especially if these be attended with feeling of weight in that region, tenesmus, micturition, descent of the uterus in the pelvis, and opening of the os uteri, we may be sure that expulsion, though retarded, will soon take place. This fact is not always attended to in abortion, for many think that if by anodynes they can abate the pain, they shall make the woman go to the full time.—This is true, with regard to many painful sensations which may attend a threatened abortion, or which may be present, although there be no appearance of abortion; but it does not hold with regard to those regular pains proceeding from universal action of the uterine fibres; and we may save both ourselves and our patients some trouble, by keeping this in remembrance.

Seeing, then, that contraction is brought on by stopping the action of gestation, and that when it is brought on it cannot be checked, nor the action of gestation restored, we must next inquire how this action may be stopped. I have already mentioned several circumstances affecting the uterus, and likely to injure its actions; and these I shall not repeat, but go on to notice some others, which are often more perceptible: and first I shall mention violence, such as falls, blows, and much fatigue, which may injure the child, and detach part of the ovum. If part of the ovum be detached, we have not only a discharge of blood, but also the uterus, at that part, suffers in its action, and may influence the whole organ, so as to stop the action universally. But the time required to do this is various, an opportunity is often given to prevent the mischief from spreading, and to stop any farther effusion—perhaps to accomplish a re-union.

Violent exercise, as dancing, for instance, or much walking, or the fatiguing dissipations of fashionable life, more especially in the

discharge from the vessels about the os uteri. The state is distinguished from uterine contraction, by our finding that the cervix is unaffected, that the pains are increased by motion or pressure, and are more irregular than those attending labour. This state may be prevented from inducing abortion, by rest, by keeping the bowels open, by anodynes preceded by venesection, if the pulse indicate it. Frictions, with camphorated spirits of wine, or laudanum, give relief. Any exertion, during the remaining period of gestation, will renew the pain in the back.

earlier months, by affecting the circulation, may vary the distribution of blood in the uterus, so much as to produce rupture of the vessels, or otherwise to destroy the ovum. There is also another way in which fatigue acts, namely, by subducting action and energy from the uterus: for the more energy that is expended on the muscles of the inferior extremities, the less can be afforded or directed to the uterus; and hence abortion may be induced at an early stage of gestation.* Even at a more advanced period, inconvenience will be produced upon the principle formerly mentioned; for the nerves of the loins conveying less energy, in many instances, though not always, to the muscles, they are really weaker than formerly, and are sooner wearied, producing pain, and prolonged feeling of fatigue for many days, after an exertion which may be considered as moderate. This feeling must not be confounded with a tendency to abortion, though it may sometimes be combined with it, for generally by rest the sensation goes off. Neither must we suppose that the child is dead, from its being usually quiet during that period, for as soon as the uterus, which has been a little impaired in its action, recovers, it moves as strongly as ever.

In the next place I mention the death of the child, which may be produced by syphilis, or by diseases, perhaps, peculiar to itself, or by that state which produces too much liquor amnii, or by injury of the functions of the placenta, which may arise from an improper structure of the gland itself, or aneurism, or other diseases of the cord. But in whatever way it is produced, the effect is the same in checking the action of gestation, unless there be twins, in which case it has been known, that the uterus sometimes did not suffer universally, but the action went on, and the one child was born of the full size, the other small and injured.† The

* The same effect is observable in the stomach and other organs. If a delicate person, after a hearty meal, use exercise to the extent of fatigue, he feels that the food is not digested, the stomach having been weakened or injured in its actions.

† It has even been known, that, in consequence of the death of one child, the uterus has suffered partially, and expulsion taken place; but the other child continuing to live, has preserved the action of gestation in that part of the uterus.

length of time required for producing abortion from this cause is various; sometimes it is brought on in a few hours; at other times, not for a fortnight, or even longer.(c) In these and similar cases, when the muscular action is commencing, the discharge is trifling, like menstruation, until the contraction become greater, and more of the ovum be separated. When symptoms of abortion proceed from this cause, it is not possible to prevent its completion; and it would be hurtful even if it were possible. When, therefore, after great fatigue, profuse evacuations in delicate habits, violent colic, or other causes, the motion of the child ceases, the breasts become flaccid, and the signs of gestation disappear, we need not attempt to retard expulsion, but should direct our principal attention to conduct the woman safely through the process.

Another cause is, any strong passion of the mind. The influence of fear, joy, and other emotions, on the muscular system, is well known; and the uterus is not exempted from their power; any sudden shock, even of the body, has much effect on this organ. The pulling of a tooth, for instance, sometimes suddenly produces abortion. A thunder storm, or violent cannonade, has been supposed to cause abortion by the concussion of the air; but it is

which, properly speaking, belonged to it, and pregnancy has still gone on. This, however, is an extremely rare occurrence; for, in almost every instance, the death of one child produces an affection of the action of gestation in the whole uterus, and the consequent expulsion of both children.

(c) In one instance that fell under my notice, a lady who had suffered several previous abortions, but who had also borne two healthy living children, was overturned in a carriage before the completion of the third month of gestation. She was extremely bruised, and was, in consequence, confined to her bed for several days; yet, upon getting about again, she fancied, after the period of quickening, that she felt the motion of the child, with all the other symptoms of favourable and healthy pregnancy. She thus went on to the full period of utero-gestation; and on the very day she calculated, was delivered of a fœtus that certainly had lost the principle of vitality for several months, not appearing larger than an embryo of five months. The placenta was also almost exsangueous, and appeared as if it might have been detached from the uterine parietes for some time. Indeed, the whole appeared like a preparation that had been preserved in sp. vini, or sp. terebinth. The lady had a speedy recovery, and, at no distant period, bore a healthy living child.

more probable when they have that effect, that it is owing to mental trepidation.

Emmenagogues, or acrid substances, such as savine and other irritating drugs, more especially those which tend to excite a considerable degree of vascular action, may produce abortion.

Such medicines, likewise, as exert a violent action on the stomach or bowels, will, upon the principle formerly mentioned, frequently excite abortion; and very often are taken designedly for that purpose in such quantity as to produce fatal effects;* hence emetics, strong purgatives, diuretics, or a full course of mercury, must be avoided during pregnancy.

If any part with which the uterus sympathizes have its action greatly increased during pregnancy, the uterus may come to suffer, and abortion be produced. Hence the accession of morbid action or inflammation in any important organ, or on a large extent of cuticular surface, may bring on miscarriage, which is one cause why small-pox often excites abortion, whilst the same degree of ever, unaccompanied with eruption, would not have had that effect. Hence also increased secretory action in the vagina, if to a great degree, though it may have even originally been excited in consequence of sympathy with the uterus, may come to incapacitate

* It is an old observation, that those purgatives which produce much tenesmus, will excite abortion; and this is certainly true, if their operation be carried to a considerable extent, and continue long violent. Hence dysentery is also apt to bring on a miscarriage. Those strong purges which are sometimes taken to promote premature expulsion, not only act by exciting tenesmus, but likewise by inflaming the stomach and bowels, and thus affect the uterus in two ways. It cannot be too generally known, that when these medicines do produce abortion, the mother can seldom survive their effect. It is a mistaken notion, that abortion can be most readily excited by drastic purges, frequent and copious bleeding, &c. immediately after the woman discovers herself to be pregnant; on the contrary, the action of the uterus is then more independent of that of other organs, and therefore not so easily injured by changes in their condition. I have already shown, that abortion more frequently happens when the pregnancy is farther advanced, because then not only the uterus is more easily affected, but the fœtus seems to suffer more readily. It is apt, either from diseases directly affecting itself, or from changes in the uterine action, to die about the middle of the third month, in which case expulsion follows within a fortnight.

the uterus for going on with its actions, and therefore it ought to be moderated by means of an astringent injection.

Mechanical irritation of the os uteri, or attempts to dilate it prematurely, will also be apt to bring on muscular contraction. At the same time, it is worthy of remark, that the effect of such irritation is generally at first confined to the spot on which it acts, a partial affection of the fibres in the immediate vicinity of the os uteri being all that is, for some time, produced; and therefore slight uneasiness at the lower part of the belly, with or without a tendency in the os uteri to move or dilate, whether brought on by irritation at the upper part of the vagina or os uteri, or by the affection of the neck of the bladder, &c. may be often prevented from extending farther, by rest, anodynes, and having immediate recourse to such means as the nature of the irritation may require for its removal.*

The irritation of a prolapsus ani, or of inflamed piles, with or without much sanguineous discharge, may excite the uterus to contract; and if the bleeding from the anus have been profuse, and the woman weakly, it may destroy the child. The piles, ought, therefore, never to be neglected.

Tapping the ovum, by which the uterus collapses, and its fibres receive a stimulus to action, is another cause by which abortion may be produced; and this is sometimes, with great propriety, done at a particular period, in order to avoid a greater evil. It is now the general opinion, that contraction will unavoidably follow the evacuation of the waters. But we can suppose the action of gestation to be in some cases so strong as not, at least for a very considerable time, to stop in consequence of this violence, and, if it do not stop, contraction will not take place. I do not, however, mean to say, that all discharges of watery fluid from the uterus, not followed by abortion, are discharges of the liquor amnii. On the contrary, I know, that most of these are the consequence of morbid action about the os uteri, the glands yielding a serous, instead

* Chronic inflammation of the heart is generally attended with pain at the bottom of the abdomen, which is sometimes mistaken for symptoms of calculus. In one case abortion seemed to proceed from this disease of the heart.

of a gelatinous fluid, and this action may continue for many months.

In all these cases, the woman must be confined to bed, and have an anodyne every night at bed-time, for some time, premising venesection if the pulse indicate it, and conjoining gentle laxatives. There is just so much probability of gestation going on, as to encourage us to use endeavours to continue it. In those instances where the discharge is small, and the oozing pretty constant, we conclude that it is yielded chiefly by the glands about the os uteri, and may derive advantage from injecting three or four times a day a strong infusion of galls, or solution of alum. The woman ought to use no exertion, as the membranes are apt to give way.

It is sometimes necessary to lay down rules for the management of pregnant women, even although they may not have been liable to abortion. These are to be drawn from the remarks already delivered, and it is only requisite to add, that in all cases it is proper to attend to the effects of utero-gestation, or the diseases of pregnancy, which are to be mitigated, when severe, by suitable remedies.

The danger of abortion is to be estimated by considering the previous state of the health, by attending to the violence of the discharge, and the difficulty of checking it; to its duration, and the disposition to expulsion which accompanies it; to the effects which it has produced in weakening the system, and to its combination with hysterical or spasmodic affections. In general, we say that abortion is not dangerous, yet in some cases, even at a very early period of gestation, and under vigorous treatment, it does prove fatal very speedily, either from loss of blood, or spasm in the stomach, or convulsions. It is satisfactory, however, to know, that this termination is rare, that these dangerous attendants are seldom present, and that a great hemorrhage may be sustained, and yet the strength soon recover. But if there be any disposition in a particular organ to disease, abortion may make it active, and thus, at a remote period, carry off the patient. Miscarriages, if frequently repeated, are also very apt to injure the health, and break up the constitution.

When abortion is threatened, the process is very apt to go on to completion; and it is only by interposing, before the expulsive efforts are begun, that we can be successful in preventing it; for whenever the muscular contraction is universally established, marked by regular pains, and attempts to distend the cervix and os uteri, nothing, I believe, can check the process. As this is often the case before we are called, or as in many instances abortion depends on the action of gestation being stopped by causes, whose action could not be ascertained until the effect be produced, we shall frequently fail in preventing expulsion.

This is greatly owing to our not being called until abortion, that is to say, the expulsive process has begun; whereas, had we been applied to upon the first unusual feeling it might have been prevented. What I wish then particularly to inculcate is, that no time be lost in giving notice of any ground of alarm, and that the most prompt measures be had recourse to in the very beginning; for, when universal uterine contraction has commenced, then all that we can do is to conduct the patient safely through a confinement, which the power of medicine cannot prevent.

The case of threatened abortion, in which we most frequently succeed, is that arising from slipping of the foot, or from causes exciting a temporary over-action of the vessels, producing a slight separation; because here the hemorrhage immediately gives alarm, and we are called before the action of gestation be much affected. Could we impress upon our patients the necessity of equal attention to other preceding symptoms and circumstances, we might succeed in many cases where we fail from a delay, occasioned by their not understanding that an expulsion can only be prevented, by interfering before that process begins; for when sensible signs of contraction appear, the mischief has proceeded too far to be checked. Prompt and decided means used upon the first approach of symptoms indicating a hazardous state of the uterus, or on the earliest appearance of hemorrhage, may, provided the child be still alive, be attended with success.

In considering the treatment, I shall, first of all, notice the most likely method of preventing abortion in those who are subject to it; next, the best means of checking it, when it is immediately

threatened; and, lastly, the proper method of conducting the woman through it, when it cannot be avoided.

The means to be followed in preventing what may be called habitual miscarriage, must depend on the cause supposed to give rise to it. It will, therefore, be necessary to attend to the history of former abortions; to the usual habitudes and constitution of the woman; and to her condition when she becomes pregnant.

In many instances a plethoric disposition, indicated by a pretty full habit, and copious menstruation, will be found to give rise to it. In these cases, we shall find it of advantage to restrict the patient almost entirely to a vegetable diet, and, at the same time, make her use considerable and regular exercise.

The sleep should be abridged in quantity, and taken, not on a bed of down, but on a firm mattress, at the same time that we prevent the accumulation of too much heat about the body. The bowels ought to be kept open, or rather loose, which may be effected by drinking Cheltenham water, or taking some other laxative. We must not, however, carry this plan too far, nor make a sudden revolution in the constitution, as this may be productive of permanent mischief, and occasion the diseases which proceed from a broken habit. Whenever the strength is diminished, the appetite impaired, or any other bad effect is produced, we have gone too great length.

There is, in plethoric habits, a weakness of many, if not all, of the functions; but this is not to be cured by tonics, but by continued and very gradually increased exercise, laxatives, and light diet, consisting chiefly of vegetables. This plan, however, must not be carried to an imprudent length, nor established too suddenly; but regard is to be had to the previous habits. It is a general rule, that exercise should not be carried the length of fatigue, and that it should be taken, if possible, in the country; whilst late hours, and many of the modes of fashionable life, must be departed from. We may also derive so considerable advantage from conjoining with this plan, the shower-bath or sea-bathing, that they ought not to be omitted. There is, I believe, no remedy more powerful in preventing abortion than the cold bath, and the best time for using it is in the morning. By means of this, conjoined with attention

to the vascular system, and prudent conduct on the part of the patient, I suppose that nine-tenths of those who are subject to abortion, may go on to the full time. If the shower-bath be employed, we must begin with a small quantity of water; and, in some instances, may at first add so much warm water, as shall make it just feel cold, but not to give too great a shock. If the cold bath cause headach, this may often be prevented by premising one or two doses of physic.

After conception, the exercise must be taken with circumspection: but the diet must still be sparing, and the use of the cold bath continued. If the pulse be at any time full, or inclined to throb, or if the patient be of a vigorous habit, a little blood should be taken away at a very early period. In some cases, where the action is great, we must bleed almost immediately after the suppression of the menses. It is not necessary to bleed copiously; it is much better to take away only a few ounces, and repeat the evacuation when required, and we should manage so as to avoid fainting. The cold bath should be conjoined, and we may derive advantage by using the digitalis,* so as slightly to affect the pulse, keeping it at or below its natural frequency, and to diminish its throbbing. But it is not requisite to be given to the degree employed in some other complaints; and if it be pushed to an imprudent length, the child may suffer. Half a grain may be given, twice or thrice a-day. It may be continued for two days, and then omitted for a day; and in this way it may be continued till the danger is past. In those cases where the digitalis produces feebleness, it is evidently improper to continue it regularly. Indeed, when this effect takes place, its further exhibition is unnecessary. It is also improper where it acts powerfully on the kidneys. By attending to these cautions, it may, in some cases requiring it, be continued with occasional omissions of a day or two, even for some weeks, but it is very seldom necessary to persist in it above a fortnight at most.

* The acetite of lead has been recommended by the ingenious and justly celebrated Dr. Rush of Philadelphia, in doses of from one to three grains, given three times a-day. Of this practice I cannot speak from my own experience; but Dr. Rush informs me that in his hands it has been attended with great success.

Injecting cold water into the vagina, twice or thrice a-day, has often a good effect, at the same time that we continue the shower-bath every morning. When there is much aching pain in the back, it is of service to apply cloths to it, dipped in cold water, or gently to dash cold water on it; or employ a partial shower-bath, by means of a small watering-can.

In this, as in all other cases of habitual abortion, we must advise, that impregnation shall not take place until we have corrected the system; and after the woman has conceived, it is requisite that she live *absque marito*, at least until gestation be far advanced. I need hardly add, that when consulted respecting habitual abortion, the strictest prudence is required on our part, and that the situation of the patient, and many of our advices, should be concealed from the most intimate friends of the patient.

In other cases, we find that the cause of abortion is connected with sparing menstruation. This is often the case with women whose appearance indicates good health, and who have a robust look. This is not often to be rectified by medicine, but it may by regimen, &c. Here, as in the former case, we find it useful to make the greatest part of the diet consist of vegetables; but it is not necessary to restrict the quantity.

When, on the other hand, the patient has a weakly delicate appearance, it will be proper to give a greater proportion of animal food, and two or three glasses of wine, in the afternoon, with some bitter laxative, twice a-day, so as to strengthen the stomach, and at the same time keep the bowels open.

We also derive in both cases, advantage from the daily use of the warm bath, made of a pleasant temperature; but this is to be omitted after conception; at least for the first ten or twelve weeks; after which, if there be symptoms of irritation, or feeling of tension about the belly, or pain about the groins, or pubis, it may be employed, and is both safe and advantageous. But when the patient is of a phlegmatic habit, or subject to profuse fluor albus, it is not indicated, and sometimes is pernicious. The internal use of the Bath waters, previous to conception, is often of service; or where the circumstances of the patient will not permit this, we may desire her to drink, morning and evening, a pint of tepid water, containing

half a drachm of sweet spirit of nitre. Throwing up into the vagina tepid salt-water twice or thrice a-day, seems also to have a good effect.

I have already mentioned, that abortion is sometimes the consequence of too firm action, the different organs refusing to yield to the uterus, which is thus prevented from enjoying the due quantity of energy and action. These women have none of the diseases of pregnancy, or they have them in a slight degree. They have good health at all times, but they either miscarry, or have labour in the seventh or eighth month, the child being dead; or if they go to the full time, I have often observed the child to be sickly, and of a constitution unfitting it for living. Blood-letting is useful by making the organs more irritable. The tepid bath is in general of advantage, and may be employed every second evening for some time.

There is another case in which all the functions are healthy and firm, except the circulation, which is accelerated by the uterine irritation. This is more or less the case in every pregnancy; but here it is a prominent symptom. The woman is very restless, and even feverish, and apt to miscarry, especially if she be of a full habit. Immediate relief is given by venesection; and afterwards we may, for some time, give every night half a grain or a grain of digitalis, with two grains of the extract of hyoscyamus.

When, on the contrary, abortion arises from too easy yielding of some organ, we must keep down uterine action, by avoiding venery, and injecting cold water often into the vagina, or pouring cold water every morning from a watering-can, upon the loins and ilia; at the same time we must attend to the organ sympathizing with the uterus.

Sometimes it is the stomach which is irritable, and the person is often very sick, takes little food, and digests ill. A small blister, or leeches, applied to the pit of the stomach often relieve this; a little of the compound tincture of bark, taken three or four times a-day, is serviceable; or a few drops of the tincture of muriated iron, in a tumbler glassful of aërated water. At other times the bowels yield, and the patient is obstinately costive. This is cured

by aloetic pills, or manna, with the tartarite of potash. When the muscular system yields, producing a feeling of languor and general weakness, the use of the cold bath, with a grain of opium at bed-time, will be of most service.

It is evident, that it is only by attending minutely to the history of former miscarriages, that we can detect these causes; and we shall generally find, that in each individual case, it is the same organ in every pregnancy which has yielded or suffered. Previous to future conception, we may with propriety, endeavour to render it less easily affected.

General weakness is another condition giving rise to abortion; and upon this I have already made some remarks. I have here only to add, that the use of the cold bath, the exhibition of the Peruvian bark, and wearing flannel next the skin, constitute the most successful practice.

Syphilis is likewise a cause of abortion. When it occurs in the mother, it often unfits the uterus for going on with its actions. At other times, more especially when the father labours under venereal hectic, or has not been completely cured, the child is evidently affected, and often dies before the process of gestation can be completed. In these cases, a course of mercury alone can effect a cure. But we are not to suppose that every child, born without the cuticle in an early stage of pregnancy, has suffered from this cause; on the contrary, as some of these instances depend on causes already mentioned, and which cannot be cured by mercury, I wish to caution the student against too hastily concluding that one of the parents has been diseased, because the child is born dead or putrid at an early period. It is not always easy to form a correct judgment; but we may be assisted by finding that the other causes which I have mentioned are absent; that we have appearances of ulceration on the child, and that there are some suspicious circumstances in the former history and present health of the parents. A child may be born dead, and even putrid, not only in consequence of syphilis, but also of some malformation of the fœtus itself, or of its appendages; or of a general imperfection of the ovum, usually combined with an increased quantity of liquor amnii; or of original debility of constitution, unfitting the

child for coming to maturity; or of fatal derangement of structure or action, taking place in utero, from causes not very obvious; or from weakness or imperfect action of the uterus itself, or such a condition of it as sometimes produces epilepsy; or it is in certain cases occasioned by a convulsion. Most of these causes are not under our control; and indeed, with the exception of the case of syphilis, we can only propose to prevent the death of the child, by the use of such general means as invigorate the constitution of the parent, or as obviate palpable predisposing causes of injury to the uterine functions.

Advancement in life, before marriage, is another cause of frequent abortion, the uterus being then somewhat imperfect in its action. In general we cannot do much in this case, except avoiding carefully the exciting causes of abortion; and by attending minutely to the condition of other organs, during menstruation or pregnancy, we may, from the principles formerly laid down, do some good.

It is satisfactory to know, that although we may fail once or twice, yet, by great care, the uterus comes at last to act more perfectly, and the woman bears children at the full time.

After these observations, it is only necessary to add, that in every instance of habitual abortion, whatever the condition may be which gives rise to it, we find it is essential that the greatest attention be paid to the avoiding of the more evident and immediate exciting causes of miscarriage, such as fatigue, dancing, &c. In some cases, it may even be necessary to confine the patient to her room, until the period at which she usually miscarries is past.

When abortion is threatened, we come to consider whether, and by what means, it can be stopped. I have already stated my opinion, that when the action of gestation ceases, it cannot be renewed, and that general contraction of the uterine fibres is a criterion of this cessation.

Still, as some of the means which may be supposed useful in preventing a threatened abortion, are also useful in moderating the symptoms attending its progress, we may properly have recourse to them. Some causes giving rise to abortion, do not immediately produce it, but give warning of their operation, producing uneasi-

ness in the vicinity of the uterus, before the action of that organ be materially affected. The detraction of a little blood at this time, if the pulse be in any measure full or frequent, or if the patient be not of a habit forbidding evacuations, and the subsequent exhibition of an anodyne clyster, or a full dose of opium,* together with a state of absolute rest in a recumbent posture for some days, will often be sufficient to prevent further mischief, and constitute the most efficacious practice. The patient should be strictly confined to bed, sleeping with few bed-clothes, and without a fire in her apartment. Indeed the very first thing to be done on entering the room, is to order the patient to bed. The diet should, in general, be low, consisting of dry toast, biscuit, and fruit; and much fluid, especially warm fluid, should be avoided.

This is the time at which we can interfere with the most certain prospect of success; and the greatest attention should be paid to the state of the rest of the system; removing uneasiness, wherever it is present, and preventing any organ from continuing in a state of undue action. It is difficult to persuade the patient to comply with that strict attention which is necessary at this period; but being persuaded that if this period be allowed to pass over with neglect, and contraction begins, nothing can afterwards prevent abortion, I wish particularly to impress the mind of the student with a due sense of its importance; and I must add, that as after every appearance of morbid uterine action is over, the slightest cause will renew our alarm, it is necessary great attention be paid for some time to the patient.

Often, instead of an uneasy feeling about the loins, or lower belly, we have, before the action of gestation stops, a discharge of blood, generally in a moderate, sometimes in a trifling degree. This is more especially the case when abortion is threatened, owing to an external cause; and, if immediately checked, we may prevent contraction from beginning.

Even in those cases where we do not expect to ward off expulsion, it is useful to prevent, as far as we can, the loss of blood; for

* Opiates are of signal benefit in this situation, and should seldom be omitted after venesection.

as I cannot see that the hemorrhage is necessary for its accomplishment, although it always attend it, I conclude that our attempts to prevent bleeding can never do harm; if they succeed in checking abortion, we gain our object; if they fail, they do not increase, but diminish the danger.

It should be carefully remembered, that the more we can save blood, the more do we serve our patient. As the means for checking the discharge will be immediately pointed out, it is unnecessary here to enter into any detail.

Sometimes the vessels about the cervix and os uteri yield, *post coitum*, a little blood; and this may occur either in those who have the uterus in a high state of activity, or more frequently where it is feeble in its functions. The same discharge may sometimes appear in rather greater quantity after impregnation, passing perhaps for the menses, and making the woman uncertain as to her situation; but it is generally, though not always, irregular in its appearance, and seldom returns above once or twice. In some instances, however, it becomes greater and more frequent in proportion as the vessels increase in size. It is now apt to pass for menorrhagia. If it be allowed to continue, it tends to injure the action of the uterus, and produces expulsion, which sometimes is the first thing which shows the woman her situation. The discharge is best managed by rest, the frequent injection of saturated solution of the sulphate of alumine, or decoction of oak bark, and the internal use of tincture of kino.

When a slight discharge takes place, in consequence of a slip of the foot, or some other external cause, we may also derive advantage from the use of the injection; but if the discharge be considerable, it will often fail. It is better, in such a case, to trust to the formation of a coagulum.

When in a plethoric habit abortion is threatened, from a fright, or mental agitation, we have often palpitation, rapidity of the pulse, headach, flushed face, and pain about the back or pubis; blood-letting relieves immediately the uneasiness in the head, and often the pain in the back; afterwards, the patient is to be kept cool and quiet, and an anodyne administered.

In those cases, where regular uterine pain precedes or accompanies the discharge, expulsion cannot be prevented; but when the discharge precedes the pain, it sometimes may; nay, if the child be still alive, it frequently may. Rest is absolutely necessary, if we wish the person to go to the full time: and it is occasionally necessary to confine her to bed for several weeks, prescribe the prudent and occasional use of digitalis,* and give an anodyne at bed-time, taking care also to keep the bowels in a proper state by gentle medicine. Blood ought also, unless the pulse and habit of the patient forbid it, to be detracted. A table spoonful of tincture of kino may be given three times daily. Styptic injections into the vagina, two or three times a-day, are of great benefit.

This is a very critical situation: much depends on the vigour and promptitude of our practice; and much, very much, upon the prudence of the patient. It is teazing to find, that sometimes after all our care and exertions, one rash act destroys in a single day the effect of the whole.

When we cannot prevent abortion, the next thing is to conduct the patient safely through the process, by lessening the effects of separation or detachment of the ovum, and accelerating the contraction. The first point which naturally claims our attention is the hemorrhage. Many practitioners, upon a general principle, bleed in order to check this, and prevent miscarriage; but miscarriage cannot be prevented, if the uterine contraction have universally commenced; and the discharge cannot be prudently moderated by venesection, unless there be undue or strong action in the vessels, or much blood in the system; and if so, a vein may be opened with advantage. This is not always the case, and

* I have in a preceding note, advised some caution in the use of digitalis in uterine floodings. I would here, also, recommend the same degree of circumspection. When given in sufficient quantity to make any very sensible impression on the system generally, it seems, in a very peculiar manner, to relax and debilitate the vessels of the uterus, disposing them, thereby, to *passive* hemorrhage. When, however, it is administered with proper restrictions, I have no doubt it may prove both a safe and a useful medicine. But still, I would greatly prefer to bleed in the above cases. C.

therefore, unless the vessels be at or above the natural force or strength of action, the lancet is not at this stage necessary. The fulness and strength of the pulse are lost much sooner in abortion than can be explained, by the mere loss of blood. This depends on an affection of the stomach, which has much influence on the pulse; and the proper time for bleeding is before this has taken place. When abortion has made so much progress before we are called, as to have rendered the pulse small and feeble; or when this is the case from the first, bleeding evidently can do no good. Instead of this, we may rather use the digitalis, but in ordinary cases, where the contraction is brisk, and the process quick, it is not at this stage absolutely necessary; and I shall afterwards mention that, when the stomachic affection is urgent, and the pulse much affected by it, the use of this medicine is improper. When, however, the case is tedious, and the discharge long continued, at the same time that the sickness is not considerable, the digitalis will be of essential service, and it may be very properly combined with the sulphuric acid. Nauseating doses of emetic medicines act in the same way with the digitalis, but are much less effectual, and more disagreeable, as well as uncertain in their operation. Internal astringents have been proposed, but they have no effect in copious hemorrhage, unless they excite sickness, which is a different operation from that which is expected from them. They are more useful in protracted, but moderate hemorrhage.

The application of cloths, dipped in cold water, to the back and external parts ought always to be had recourse to. If the digitalis have been exhibited, it assists that medicine in moderating the circulation. Even when trusted to alone, it lessens the action of the sanguiferous system, particularly of the uterine vessels. The introduction of a small piece of smooth ice into the vagina has been recommended, and has often a very speedy effect in retarding the hemorrhage, whilst it never, if properly managed, does any harm. A small snow-ball, wrapped in a bit of linen, will have the same effect; but neither of these must be continued so long as to produce pain, or much and prolonged shivering. The heat of

the surface is also to be moderated, by having few bed-clothes, and a free circulation of cool air.

But the most effectual local method of stopping the hemorrhage is by plugging the vagina. This is best done by taking a pretty large piece of soft cloth, and dipping it in oil, and then wringing it gently. It is to be introduced with the finger, portion after portion, until the lower part of the vagina be well filled. The remainder is then to be pressed firmly on the orifice. This acts by giving the effused blood time to coagulate. It gives no pain; it produces no irritation; and those who condemn it, surely must either not have tried it or have misapplied it. If we believe that abortion requires for its completion a continued flow of blood, we ought not, in those cases where the process must go on, to have recourse to cold, or other means of restraining hemorrhage. If we do not believe this, then surely the most effectual method of moderating it is the best. Plugging can never retard the process, nor prevent the expulsion of the ovum; for when the uterus contracts, it sends it down into the clotted blood in the upper part of the vagina, and the flooding ceases.

Faintness operates also in many cases, by allowing coagula to form, in consequence of the blood flowing more slowly; and when the faintness goes off, the coagula still restrain the hemorrhage in the same way as when the plug has been used. This naturally points out the advantage of using the plug, together with the digitalis, as we thus produce coagulation at the mouth of the vessels, and also diminish the vascular action. It will likewise show the impropriety of using injections at this time; for by washing out the coagula, we do more harm than can be compensated by any astringent effect produced on the vessels.

The principal means, then, which we employ for restraining the hemorrhage, are bleeding, if the pulse be full and sharp; if not, we trust to the digitalis, combined with sulphuric acid, except in those cases already specified, as forbidding its use, in which we may substitute kino: to stuffing the vagina: to the application of cold to the external parts, keeping the heat of the body in general at a low temperature; and enforcing a state of absolute rest, which

must be continued during the whole process, however long it may, in some cases, be. The drink should be cold, and the food, if the patient desire any, light, and taken in small portions.

Opiates have been advised, in order to abate the discharge, and are, by many, used in every case of abortion, and in every stage. But, as we cannot finish the process without muscular contraction, and, as they tend to suspend that, I do not see that their constant exhibition can be defended on rational principles. If given in small quantity, they do no good in the present point of view; if in larger doses, they only postpone the evil, for they cannot check abortion after contraction has begun. But I will not argue against the use of opiates from their abuse. They are very useful in cases of threatened abortion, more especially in accidental separation of the membranes and consequent discharge. They do not directly preserve the action of gestation, but they prevent the tendency to muscular contraction, and thus do good. In weakly or emaciated habits, opiates alone, if given upon the first appearance of mischief, are often sufficient to prevent abortion; and, in opposite conditions, when preceded by venesection, they are of great service. Opiates are likewise useful for allaying those sympathetic pains about the bowels, and many of the nervous affections which precede or accompany abortion. They are also of much benefit in cases where we have considerable and protracted discharge, with trifling pains, as the uterus is not contracting sufficiently to expel the ovum, but merely to separate vessels, and excite hemorrhage. By suspending for a time its action, it returns afterwards with more vigour and perfection, and finishes the process. But when the process is going on regularly, opiates will only tend to interfere with it, and prolong the complaint.

It was at one time, a very frequent practice to endeavour, with the finger or small forceps, to extract the fœtus and placenta, in order to stop the discharge. Puzos strongly opposed this practice, and it is now very properly given up as a general rule. I do not wish, however, to be understood as altogether forbidding manual assistance; but I am much inclined to consider it a useful precept, not to be hasty in attempting to extract the ovum. If the discharge be protracted, and the membranes entire, we may, if the situation

of the patient require it, sometimes accelerate expulsion, by evacuating the liquor amnii. But if the pregnancy be not advanced beyond the fourth month, it will be better to trust to smart clysters, and restrain the hemorrhage by means of the plug. We thus have a greater likelihood of getting all the ovum off at once, and may excite the action by gently dilating the os uteri, and moving the finger round it. If the membranes have given way, and the fœtus be still retained, we may, by insinuating a finger within the uterus cautiously, hook it out; or, in many cases, it will be found partly expelled through the os uteri, and may easily be helped away. But the most tedious and troublesome case generally is that in which the fœtus has been expelled, but the secundines are still retained, under one of two circumstances, namely, either they are only partially detached, and still adherent to a certain extent, or there is a circular and spasmodic contraction of the uterine fibres around a portion of them; a state which may occur even before the fœtus itself be expelled. Now, we never can consider the patient as secure from hemorrhage until these be thrown off, and therefore she must be carefully watched, especially when gestation is considerably advanced. In a great majority of instances, the uterus, within a few hours, contracts and expels them. But in some cases, the hemorrhage does become profuse, and there is little disposition to throw them off. By stuffing the vagina, we shall often find that the discharge is safely stopped, and the womb excited to act in a short time; or a warm saline clyster is to be given, of such strength as shall briskly stimulate the rectum, and excite sympathetically the uterus. But if we be disappointed, or the symptoms urgent, the finger must be introduced within the uterus,* and the remains of the ovum slowly detached by very gentle motion; and we must be very careful not to endeavour to pull away the secundines until they be fully loosened, for we thus leave part behind, which sometimes gives a great deal of trouble; and further, if we rashly endeavour to extract, we irritate the uterus, and are apt to excite inflammation, or a train of hysterical,

* In some instances the half of the secundines will be found in the vagina, and the other half still in the uterus. In this case, all that is necessary is gently to bring them out.

and sometimes fatal symptoms. It is these two circumstances which make me cautious in advising manual assistance; and, fortunately, the proportion of cases requiring it is not great in abortion at an early period. When there is retention of the secundines, with repeated or continued discharge, and frequent but useless pains, with feeling of sickness or sinking, we may suspect that part of the uterus is contracting spasmodically round the upper portion of the placenta, whilst all the rest is detached. This state of the womb, known under the name of the hour-glass contraction, is frequent after delivery at the full time; but it is perhaps scarcely less so after abortion, and may be met with even at a very early period, and most probably is the cause of every obstinate, and especially every fatal, case. If a smart clyster do not excite regular and efficient contraction, it is necessary to introduce the hand into the vagina, and with one or more fingers remove the secundines, and excite the womb to proper action. The part of the placenta retained in the upper division by the constriction, is sometimes not larger than a walnut, although the patient be three or four months pregnant.

When part of the ovum is left, or the whole of the secundines are retained, for a considerable time, we have another danger besides hemorrhage; for, within a few days, putrefaction comes on, and much irritation is given to the system, until the fœtid substance be expelled. Sometimes, if gestation have not been far advanced, or the piece which is left be not very large, it continues to come away in small bits for many months; and during the whole time, the woman is languid, hysterical, and subject to irregularities of the menstrua, very often to obstruction. But more frequently the symptoms are very acute; we have loss of appetite, prostration of strength, tumid or tender belly, frequent, small, and sharp pulse, hot and parched state of the skin of the hands and feet, nocturnal sweats, and various hysterical symptoms. The discharge from the vagina is abominably fœtid, and hemorrhage sometimes occurs to a violent degree. The treatment of this will hereafter be pointed out.

From these observations we may see, upon the one hand, the

impropriety of allowing the secundines to remain too long in the uterus; and, on the other, the danger of making rash or unnecessary attempts to extract, by which we irritate the uterus, and tear the placenta, which is almost always productive of troublesome consequences. The mechanical removal of the placenta is effected with least trouble and smallest irritation, in those cases in which it is most required, namely, where it is entirely or nearly detached, but still retained by a spasmodic contraction round the upper part, whilst in those where there is adhesion, there is generally less occasion to interfere, in the way of extraction, on account of the severity of the hemorrhage. I now return to the consideration of the usual progress of abortion. The stomach very soon suffers, and becomes debilitated, producing a general languor and feebleness, with a disposition to faint, which seems in abortion, to depend more upon this cause than directly upon loss of blood. Indeed, the hemorrhage produces both slighter and less permanent effects in abortion than at the full time, although less blood may have been lost in the latter, than in the former case, for the vessels are smallar and the discharge is not so sudden. There is still another cause for this; namely, that the action of the uterus is less in the early than in the late months. Now, we know that the effect of hemorrhage from any organ is, *cæteris paribus*, in proportion to its degree of action. Hence the discharge is less dangerous than at the full time, and still less in menorrhagia than in abortion.

The effect of abortion on the stomach seems to be in proportion to the period at which it takes place, being greater when it occurs before the fourth month than after it. The effect, though distressing, and often productive of alarm, is nevertheless beneficial, lessening the action of the vessels in the same way with digitalis, the use of which is improper when this condition is present. The strength of the pulse is much abated; sometimes it becomes slower; but in general it remains much as formerly, in point of frequency; we are therefore not to be too anxious in removing this condition, which restrains hemorrhage; yet as it may go beyond due bounds and produce dangerous syncope, we must check it in time. We must likewise be very attentive to the state of the

discharge when this affection is considerable, for if, notwithstanding this, the hemorrhage should continue, it will produce greater and more immediately hurtful effects than if this were absent.

The best method of abating this sinking and feebleness, is to keep the body perfectly at rest, and the head low. If necessary, we give small quantities of stomachic cordials, such as a little tincture of cinnamon, or a few drops of ether in a glass of aërated water; or we may give a little peppermint water, with fifteen drops of tincture of opium. In urgent cases, Madeira wine or undiluted brandy may be given; but these are not to be frequently repeated, and are very rarely necessary. Large doses of opium are also useful.

Sometimes, instead of a feeling of sinking and faintness, the fibres of the stomach are thrown into a spasmodic contraction, producing sudden and violent pain. This is a most alarming symptom, and may kill the patient very unexpectedly. It is to be instantly attacked by a mixture of sulphuric ether and tincture of opium, in a full dose, whilst a sinapism is applied to the epigastric region; but if, when this pain occurs, there be symptoms of approaching convulsions, then bleeding should precede the anodyne, and no ether should be given.

Spasms about the intestines are more frequent, and much less dangerous. They are very readily relieved by thirty drops of tincture of opium, in a dessert-spoonful of aromatic tincture, or forty drops of the tincture of hyoscyamus in two tea-spoonfuls of the compound tincture of lavender.

These disagreeable symptoms which I have described, fortunately do not often attend abortion; but the process goes on safely, and without disturbance. In this case, after it is over, we only find it necessary to confine the person to bed for a few days, as getting up too soon is apt to produce debilitating discharge. We must also, by proper treatment, remove any morbid symptoms which may be present, but which, depending on the peculiarities of individuals, or their previous state of health, cannot here be specified. When the patient continues weakly, the use of the cold bath, and sometimes of bark, will be of much service in restoring

the strength; and, in future pregnancies, great care must be taken that abortion may not happen again at the same period.

§ 37. UTERINE HEMORRHAGE.

Of all the incidents to which a pregnant woman is exposed, none is more alarming or troublesome than uterine hemorrhage, when it occurs in the advanced stages of gestation, or after the delivery of the child. This, from its extent and impetuosity, has aptly been called a flooding; and, from the frequency of its occurrence, it must be extremely interesting to every practitioner.

The ovum is connected to the uterus by means of a vast multitude of delicate vessels, which pass almost at every point from the one to the other. These vessels are large where the placenta is attached; smaller where they pass into the decidua.

As the ovum corresponds exactly to the inner surface of the uterus, and is in close and intimate contact with it, we find that as long as this union subsists, the vessels, notwithstanding their delicacy, are enabled to transmit blood without effusion. But whenever a separation of the one from the other takes place, then these vessels are either directly torn; or, even supposing them to extend a little, they must be ruptured by their own action, or by the force of the blood which they receive and circulate. When this happens, an extravasation or discharge must be the consequence, which will be greater or smaller in proportion to the number and magnitude of the vessels which have given way, and the strength of the action, which exists in the sanguiferous system.

The membranes are never so full of water as to be put upon the stretch, and therefore they cannot forcibly distend the womb, and make pressure on its inner surface. The womb again, during gestation, does not embrace the membranes tightly, so as to compress them. Hence it is evident, that when rupture first takes place, no resistance can, by the action of the one upon the other, be afforded to the flow of the blood. The consequence of uterine hemorrhage, when considerable, is, that the force of the circulation is diminished; faintness, or absolute syncope, being induced. The blood in

this state flows more feebly; coagulation is allowed to take place, and the paroxysm is, for the present, ended. This coagulation, in slight cases, may take place even without the intervention of faintness. Re-union, however, when the separation is extensive, and the coagulum considerable, cannot be expected to take place; and, therefore, when the clot loosens, a return of the hemorrhage is in general to be looked for.

One or more copious discharges of blood must injure the functions of the uterus, and ultimately destroy, altogether, the action of gestation. This tends to excite the muscular action of the uterine fibres; and, by their contraction, two effects will be produced. The uterine vessels will be diminished in their diameter or capacity, and the whole surface of the womb pressing more strongly upon the ovum, a greater resistance will be given to the flow of the blood.

Thus it appears, that nature attempts to save the patient in two ways. First, by the induction of a state of faintness, or sometimes of complete syncope, which tends to check the present attack. Secondly, when the hemorrhage is so great or obstinate as to prevent any possibility of the woman going safely to the full time, such effects are produced as tend to establish muscular contraction, and accelerate expulsion. This double process ought, in all our reasonings, to be held in view.

Uterine contraction is of two kinds, which may be called permanent and temporary. The permanent, is that continued action of the individual fibres by which the uterus is rendered tense, so that it feels hard if the hand be introduced into its cavity. The temporary, is that greater contraction which is excited at intervals for the expulsion of the fœtus, producing what are called the pains of labour.

In those cases where nature effects a cure by expulsion, or the production of labour, it is chiefly to the permanent or tonic contraction that we are indebted for the stoppage of hemorrhage; because this contraction lessens the size of the vessels, and keeps up a firm pressure of the uterine surface upon the ovum, until the pains have accomplished the expulsion or delivery of the child. The pains alone could not do this good; for coming only at inter-

vals, their effect would be fugacious. On the other hand, the permanent contraction would not be adequate to the purpose, without the pains, for these temporary paroxysms excite this action to a stronger degree, and by ultimately forcing down the child, accomplish delivery before the powers of the uterus be worn out.

Such are the steps by which the patient is naturally saved. But we are not to expect that these shall, in every instance, or in a majority of instances, take place at the proper time, or in the due degree. The debility and syncope may go too far; or the clots may not form in proper time, or may come away too soon, or too easily. The action of gestation may continue, notwithstanding the violence of the hemorrhage, thus preventing the accession of muscular contraction; or before this contraction be established and the child expelled, the discharge may have been so great and constant as to render the efforts of the womb weak and inefficient, and by still continuing, may destroy them altogether.

These circumstances being considered, it will be evident, that although when the injury is small, and the discharge trifling, nature may permanently check it; or in more serious cases, may preserve the woman by the expulsion of the child; yet we cannot, with prudence, place our whole reliance on her unassisted operations.

There is also another circumstance relating to a particular species of flooding, which renders the accomplishment of a natural cure or escape still more doubtful. This is, that the placenta is sometimes attached to the os uteri, which necessarily must produce a hemorrhage whenever the cervix comes to be fully developed, and the mouth to open.

The vessels going to the placenta are much larger than those which enter the decidua; and therefore if part of the placenta be detached, the quantity and velocity of the discharge must be greater, and the effects more to be dreaded, than when a part of the decidua alone is separated. If the placenta be fixed near the cervix uteri, and a part of it be detached, then the blood which is effused will separate the membranes down to the os uteri, and a profuse hemorrhage will appear. But sometimes, if it be fixed to the fundus uteri, the blood may be confined, especially if the sepa-

tion have been trifling, and a coagulum will be formed exterior to the membranes, the lower part of which will still adhere to the uterus; or if the central portion of the placenta have been detached, a collection of blood may be formed behind it, but may not extend beyond its circular margin. But if the placenta be placed over the os uteri, then the case is different; profuse discharge will take place, sinking the whole system, and very much enfeebling the uterus itself, so that when uterine contraction does come on, it will be weak, and incapable of speedily effecting expulsion; even although the contraction should be brisk and powerful, it cannot, owing to the structure of the placenta, do the same good as in other cases of flooding; and therefore, in every instance, much blood will be lost, and in many, in very many, the patient, if we trust to this contraction alone, will perish. Contraction can only be expected in this case to do good, when it is powerful, and the pains come on so briskly as speedily to empty the uterus, at the same time that coagula shut the mouths of the placental vessels at the unsupported part.

It has been a common opinion, that flooding proceeded always from the detachment of a part of the placenta; but this point is not established.* In several cases of uterine hemorrhage, the placenta will be found attached to the fundus uteri; and we cannot suppose that in all of these, the whole extent of the membranes, from the placenta to the os uteri, has been separated: yet this must happen before the discharge can in these circumstances appear. We can often account for the hemorrhage, by supposing a portion of the decidua to be detached; and we know that the vessels about the cervix are sufficiently able to throw out a considerable quantity of blood, if their mouths be open. But in most cases of profuse he-

* Long ago, Andrea Pasta questioned the opinion, that flooding was always produced by separation of the placenta.—Vide Discorso del flusso di sangue, &c. We are not, however, to suppose, that hemorrhage does not proceed from detachment of the placenta in any instance when it is placed high up, but only that it is a rare occurrence. When the stream is rapid and profuse, we have every reason to suppose that part of the placenta is separated; but if we have occasion to deliver, it will generally be found, that it is placed close by the cervix uteri, or at least not very far from it.

morrhage, we shall find, that the placenta is attached near the os uteri, and more or less of it separated.

It is possible for blood to be effused in consequence of detachment of part of the ovum, and yet it may not be discharged by the os uteri.* This detachment may be produced by fatigue, falls, blows, &c. and the effusion is accompanied with dull internal pain at the spot where it takes place. This pain is something like colic, or like pain attending the approach of the menses. The part of the womb where the extravasation takes place, swells gradually, and the uterus in a short time feels larger. If the quantity be considerable, the size increases, the uterus is firmer and tenser, as well as larger, the strength diminishes, and even faintings may come on. In course of time, weak slow pains are felt, but if the injury be great, these decline as the weakness increases. They may or may not be attended with the discharge of coagula from the os uteri. In such a case, it is evident, that nothing but delivery can save the mother. But if no bad effect be produced, and the separation is not extensive, the accident may not be discerned or suspected, at least till after the child is born, when often a great quantity of blood is evacuated without affecting the pulse or strength, which it would do, did it come recently from the vessels of the uterus.

Let us next consider the causes giving rise to hemorrhage in various degrees; and the first that I shall mention is external violence, producing a separation of part of the ovum. As the ovum and uterus correspond exactly to each other, and are, in the advanced stages of gestation, composed of pretty pliable materials, falls or blows do not produce laceration so frequently as might be supposed. In a majority of instances, the effect is produced chiefly by the operation on the vessels, their action being violently and suddenly excited, and rupture of their coats thus produced. When the ovum is mechanically detached, the injury must have been considerable, and in general the fœtus is destroyed.

Fatigue or much exertion may injure the action of the uterus, and give rise to premature expulsion, which in this case is gene-

* Vide Albinus Acad. Annot. lib. I. p. 58. Recueil Periodique, tom. ii. p. 15. and tom. iii. p. 1.

rally attended with considerable discharge. Such exertions are likewise apt, by their effect on the circulation, to operate on the vessels passing to the ovum, and produce in them a greater degree of activity than they are capable of sustaining without rupture. It is, therefore, very properly laid down as a rule of practice, to forbid pregnant women to undergo much fatigue, or exert any great muscular action; and wherever this rule has been departed from, especially by a patient of an irritable or of a plethoric habit, it behooves the practitioner to attend carefully to the first appearances of injury, or to the first symptoms of decay in the uterine action. Rest, and an opiate, will upon general principles be indicated, and when the circulation is affected, or we apprehend increased action about the uterine vessels, venesection must be premised, and the patient kept cool and tranquil.

Violent straining at stool, or strong exertions of the abdominal muscles, made in lifting heavy bodies, or in stretching to a height, or frequent and continued stooping, may all, by compressing the womb, cause separation. For the greatest effect will be produced where the resistance is least, or the support smallest, which is at the under part of the uterus, and there rupture will be apt to take place.

A preternatural degree of action in the vessels going to the placenta or decidua, must be dangerous, and likely to produce rupture and extravasation. This may either be connected with a general state of the vascular system, marked by plethora, or by arterial irritation; or it may be more immediately dependent on the state of the uterus itself.

When the patient is plethoric, or when the action of the vascular system is increased, it is natural to suppose, that the effect will be greatest on those parts of the womb which are in the highest state of activity. These are chiefly two; the part to which the placenta is attached, for there the vessels are large and numerous; and the cervix and os uteri, because there the greatest changes are going forward. At one or other of these two places, rupture is most likely to take place, and it will happen still more readily if the placenta be attached at or near to the cervix. It may be excited either by too much blood circulating permanently in the system, or by a temporary increase of the strength and velocity of the circu-

lation, produced by passion, agitation, stimulants, &c. A plethoric state is a frequent cause of hemorrhage in the young, the vigorous, and the active; the decidua is separated, and a considerable quantity of blood flows; perhaps the placenta is detached, and the hemorrhage is more alarming. In some cases, the rupture is preceded by spitting of blood, or bleeding at the nose, and in these cases the lancet may be of much service.

We sometimes find that extravasation is produced by an increased action of the uterine vessels themselves, existing as a local disease. In this case, the patient, for some time before the attack, feels a weight and uneasy sensation about the hypogastric region, with slight darting pains about the belly or back. These precursors have generally been ascribed to a different cause; namely, rigidity of the ligaments of the womb or of the fibres of the uterus itself.

Spasmodic action about the os uteri, must produce a separation of the connecting vessels. The causes giving rise to this in the advanced period of gestation, are not always obvious, neither can we readily determine the precise cases in which this action excites flooding. We should expect that the discharge ought always to be preceded by pain, but we know that motion may take place in some instances about the os uteri without much sensation; and, on the other hand, many cases of flooding, not dependent on motion of the uterine fibres, are attended with uneasiness or irregular pain about the abdomen. This spasmodic action is not unfrequently produced by hanging pregnant animals.

Whatever stops prematurely the action of gestation, may give rise to a greater or less degree of hemorrhage. For in this case, the development of the cervix takes place quickly, and the ovum must be separated. The quantity of the discharge* will depend upon the state of the circulation—the magnitude of the vessels which are torn—the contraction of the uterus—and the care which is taken of the patient. Hence it follows as a rule in every pre-

* In those cases where the contraction becomes universal and effective, we have little discharge, and the patient is merely said to have a premature labour; but if the contraction be partial, and do not soon become effective, then we have considerable discharge, and the patient is said to have a flooding.

mature labour, more especially in its first stage, that we prevent all exertion, refrain from the use of stimulants, and confine the patient to a recumbent posture.

It sometimes happens, that effective contraction does not take place speedily after the action of gestation ceases, but a discharge appears. This may stop by the induction of syncope, or the formation of clots. The blood which is retained about the cervix and os uteri putrefying, produces a very offensive smell. Milk is secreted as if delivery had taken place, and sometimes fever is excited. In this state the patient may remain for some days, when the hemorrhage is renewed, and the patient may be lost if we do not interfere.

Some undue state of action about the os uteri, removing or ceasing to form that jelly which naturally ought to be secreted there, is another cause.

This is generally productive of a discharge of watery fluid, tinged with blood; and if the patient be not careful, pure blood may be thrown out in considerable quantity. It may even happen, that the hemorrhage, under certain circumstances, may prove fatal; and yet, upon dissection, no separation of the ovum be discovered, the discharge taking place from the vessels about the os uteri itself.*

In some instances where a portion of the placenta has been detached, I have observed, that near the separated part, the structure of the placenta was morbid, being hard and gristly. In these cases, I could not detect any other cause of separation, and suppose that by the accidental pressure of the child upon the indurated part, the uterus may have been irritated.

The insertion of the placenta over the os uteri,† may give rise to flooding in different ways.

* Vide a case in point, by M. Heinigke, in the first volume of Brewer's Biblioth. Germ.

† So far as I have observed, uterine hemorrhage, when profuse, is produced most frequently by this cause; at least two-thirds of those cases requiring delivery, proceed, I think, from the presentation of the placenta; and in the majority of the remaining third, it will be found attached near to the cervix. Most of those hemorrhages, which are cured without delivery, proceed from the detachment of

The uterus and placenta may remain in contact until the term of natural labour, the one adapting itself to the other; but whenever the os uteri begins to dilate, separation and consequent hemorrhage must take place. It is rare, however, for the accident to be postponed so long. In general, at an earlier period, in the eighth, or by the middle of the ninth month, we find that either the uterus and placenta no longer grow equally, in consequence of which the fibres about the os uteri are irritated to act; or so much blood as must necessarily, in this situation, circulate about the cervix uteri, interferes with its regular actions, and induces premature contraction of its fibres, with a consequent separation of the connecting vessels.

In order to ascertain whether the hemorrhage proceed from this cause, we ought, in every case to which we are called, carefully to examine our patient. The introduction of the finger is sometimes sufficient for this purpose, but frequently it may be necessary to carry the whole hand into the vagina.

If the placenta present, we shall feel the lower part of the uterus thicker than usual, and the child cannot be so distinctly perceived to rest upon it. This is ascertained by pressing with the finger on the fore part of the cervix, betwixt the os uteri and bladder, and also a little to either side.*

If the os uteri be a little open, then, by insinuating the finger, and carrying it through the small clots, we may readily ascertain whether the placenta or membranes present, by attending to the difference which exists betwixt them. But in this examination, we must recollect, that only a small portion of the edge of the placenta may present, and this may not readily be felt at first.

To conclude this part of the subject, I remark, in general, that hemorrhage from the uterus is not merely arterial, but also vein-

the decidua alone, or of a very small portion of the placenta, which has been separated under circumstances favourable for firm coagulation.

* When a large coagulum occupies the lower part of the uterus, we may be deceived if we trust to external feeling alone, without introducing the finger within the os uteri. If the uterus have its usual feel, and the child be felt distinctly through it, then we are sure that, however near the placenta may be to the os uteri, it is not fixed exactly over it.

ous, and the orifices of these latter vessels are extremely large. Almost immediately after conception, the veins enlarge and dilate, contributing greatly to give to the uterus the doughy feel which it possesses. In the end of gestation the sinuses are of immense size, and their extremities so large that in many places they will admit the point of the finger. Now, as all the veins communicate more freely than the arteries, and, as they have in the uterus no valves, we can easily conceive the rapidity with which discharge will take place, and the necessity of encouraging coagulation, which checks veinous still more readily than arterial hemorrhage.

In whatever way flooding is produced, it has a tendency to injure or disturb gestation, and to excite expulsion; but these effects may be very slowly accomplished, and in a great many instances may not take place in time to save the patient or her child. Having already noticed those changes produced on the womb itself by hemorrhage, and the danger of trusting to them for the recovery of the patient, I will not recapitulate, but proceed very shortly to mention the effects produced on the system at large.

During the continuance of the hemorrhage, or by the repetition of the paroxysms, if this be allowed to take place, certain alterations highly important are taking place. There is much less blood circulating than formerly; and this blood, when the hemorrhage has been frequently renewed, is less stimulating in its properties, and less capable of affording energy to the brain and nerves. The consequence of this is, that all the actions of the system must be performed more languidly, and with less strength. The body is much more irritable than formerly, and slight impressions produce greater effects. This gives rise to many hysterical, and sometimes even to convulsive affections. The stomach cannot so readily digest the food—the intestines become more sluggish—the heart beats more feebly—the arteries act with little force—the muscular fibres contract weakly—the whole system descends in the scale of action, and must, if the expression be allowable, move in an inferior sphere. In this state, very slight additional injury will sink the system irreparably—very trifling causes will unhinge its actions, and render them irregular. If the debility be carried to a degree farther, no care can recruit the system—no means can re-

new the vigour of the uterus. We may stop the hemorrhage, but recovery will not take place. We may deliver the child, but the womb will not contract. If when the system is debilitated by hemorrhage, some irritation be conjoined, then the muscular action becomes more or less irregular, and an approximation is made to a state of fever. The pulse is feeble, but sharp; the skin rather warm; and the tongue more or less parched. This state of the vascular system is dangerous, both as it exhausts still more a frame already very feeble, and also as it tends to renew the hemorrhage. It will often be found to depend upon slight uterine irritation, upon accumulation in the bowels, upon pulmonic affections, upon muscular pain, or upon the injudicious application of stimuli.

Such organs as have been previously disposed to disease, or have been directly or indirectly injured during the continuance of protracted flooding, may come to excite irritation, and give considerable trouble.

An acute attack of hemorrhage generally leaves the patient in a state of simple weakness; but if the discharge be allowed to be frequently conjoined, and the case thus protracted, some irritation often comes to be produced, which adds to the danger, and excites, if the patient be not delivered, more speedy returns.

A woman seldom suffers much in a first attack of hemorrhage. If she be stout and plethoric, she may lose a great quantity of blood, and yet, to appearance, not be greatly injured. The hemorrhage may come on in every different situation; in bed she may awake suddenly from a dream, and feel herself swimming in blood; or it may attack her when walking; or may be preceded by a desire to make water, and she is surprised to find the chamber-pot half filled with blood. She recovers from her consternation; perhaps in spite of every injunction, she walks about as usual, and finds no bad effect from motion; the feeling of heaviness which may have preceded the accident, is gone, she is lighter and better than she was before it, and hopes all is well; but in a few days the hemorrhage is repeated, and again stops; at last, after one or two attacks, for the time is uncertain, the os uteri become soft, and opens a little, perhaps without pain, or she feels dull slight pains, which, however, give her very little uneasiness. This state may take place early, and

without dangerous debility; it may take place in the second or third attack; or, possibly, the hemorrhage may never have entirely ceased, continuing for a day or two like a flow of the menses, and then being suddenly increased, or flowing in a torrent. But, although this state may take place without alarming debility, it may also, and that very suddenly, be attended with the utmost danger, or may be accompanied with so much hemorrhage as to prove absolutely fatal. The patient is found without a drop of blood in her face, the extremities cold, the pulse almost gone, the stomach unable to retain drink. She is in the last stage of weakness, but it is not the weakness produced by fever or disease, for we find her voice good, and, generally, the intellect clear. The hemorrhage has, perhaps, stopped, and a young man would suppose it still possible for her to recover. But, although not a drop of blood is afterwards lost, the debility increases, the pulse is quite gone, she breathes with difficulty, and gives long sighs, wavers in her speech, and in a short time expires.

We may lay it down as a general observation, that few cases of profuse hemorrhage, occurring in an advanced stage of gestation, can be cured without delivery or the expulsion of the child. For when the discharge is copious or obstinate, the placenta is generally separated, sometimes to a very considerable extent, and a reunion, without which the woman can never be secure against another attack, can rarely be expected. If the placenta present, the hemorrhage, although suspended, will yet to a certainty return, and few shall survive if the child be not delivered.

But in those cases where only a portion of the decidua, or a little bit of the margin of the placenta* has been detached, and the communicating vessels opened, either by a state of over-action in the vascular system, or by too much blood in the vessels, or by some mechanical exertion, if proper care be taken, the hemorrhage may be completely and permanently, checked; or if it should return, it may be kept so much under, or may consist so much of the watery discharge from the glands about the os uteri,

* In this case, after labour is over, we may discover the separated portion by the difference of colour; it is generally browner and softer than the rest.

as neither to interfere with gestation, nor injure the constitution; yet it is to be recollected, that even these cases of flooding may sometimes proceed to a dangerous degree, requiring very active and decided means to be used; and in no case can the patient be considered as safe, unless the utmost care and attention be paid to her conduct.

It would thus appear, that some hemorrhages almost inevitably end either in the delivery of the child, or the death of the parent; whilst others may be checked or moderated without an operation. A precise diagnostic line, liable to no exceptions, cannot be drawn betwixt these cases; and therefore, whilst we believe that rapid and profuse hemorrhages, which indicate the rupture of large vessels, can seldom be permanently checked, we still, provided the placenta do not present, are not altogether without hopes of that termination, which is more desirable for the mother, and safer for the child, than premature delivery. In slighter cases, our hope is joined with some degree of confidence.

A second attack, especially if it follow soon after the first, and from a slight cause, or without any apparent cause, greatly diminishes the chance of carrying the woman to a happy conclusion without manual interference.

In forming our opinion respecting the immediate danger of the patient, we must consider her habit of body, and the previous state of her constitution. We must attend to the state of the pulse, connecting that in our mind with the quantity and rapidity of the discharge. A feeble pulse, with a hemorrhage, moderate in regard to quantity and velocity, will, if the patient have been previously in good health, generally be found to depend on some cause, the continuance of which is only temporary. But when the weakness of the pulse proceeds from profuse or repeated hemorrhage, then although it may sometimes be rendered still more feeble by oppression, or feeling of sinking at the stomach; yet, when this is relieved, it does not become firm. It is easily compressed, and easily affected by motion; or, sometimes, even by raising the head.

If the paroxysm is to prove fatal, the debility increases—the pulse flutters and becomes imperceptible—the extremities first, and then the whole body, become cold and clammy—the breath-

ing is performed with a sigh—she calls to be raised and have the windows opened—is in constant motion, with great anxiety, perhaps vomits—and syncope closes the scene.

If irritation be conjoined with hemorrhage, then the pulse is sharper, and, although death be near, it is felt more distinctly than when irritation is absent.

The termination in this case is often more sudden than a person, unacquainted with the effect of pain and irritation on the pulse, would suppose. For when the pulsation is distinct, and even apparently somewhat firm, a slight increase of the discharge, or sometimes an exertion without discharge, speedily stops it, the heat departs, and the patient never gets the better of the attack.

We must likewise remember, that a discharge, which takes place gradually, can be better sustained than a smaller quantity, which flows more rapidly. For the vessels in the former case come to be accustomed to the change, and are able more easily to accommodate themselves to the decreased quantity. But when blood is lost rapidly, then very speedy and universal contraction is required in the vascular system, in order that it may adjust itself to its contents, and this is always a debilitating process. The difference too betwixt the former and the present condition of the body, is rapidly produced, and has the same bad effect as if we were instantly to put a free liver upon a very low and abstemious diet.

In all cases of flooding, we find, that during the paroxysm, the pulse flags, and the person becomes faint. Complete syncope may even take place; but this in many cases is more dependent on sickness or oppression at the stomach, than on direct loss of blood. In delicate and irritable habits, the number of fainting fits may be great, but unless the patient be much exhausted, we generally find that the pulse returns, and the strength recruits. The prognosis here must depend greatly on the quantity and velocity of the discharge; for it may happen, that the first attack of hemorrhage may produce a syncope, from which the patient is never to recover.

When we are called to a patient recently attacked with flooding, our most obvious duty is immediately to restrain the violence of the discharge; after which we can take such measures as the

nature of the case may demand, either for preserving gestation, or for hastening the expulsion of the child.

A state of absolute rest, in a horizontal posture, is to be enforced with great perseverance, as the first rule of practice. By rest alone, without any other assistance, some hemorrhages may be cured; but without it, no woman can be safe. Even after the immediate alarm of the attack is over, the woman must still recollect her danger. She should be confined to bed, upon a firm mattress for several days, and ought not to leave her apartment for a much longer period.

In general, the patient has gone to bed before we are called; and, perhaps, by the time that we arrive, the bleeding has in a great measure ceased. The partial unloading of the vessels, produced by the rupture, the induction of a state approaching to syncope in consequence of the discharge, the fear of the patient, and a horizontal posture, may all have conspired to stop the hemorrhage.

The immediate alarm from the flooding having subsided, the patient often expresses herself as more apprehensive of premature labour, than of the hemorrhage, which she considers as over. If the attack have been accompanied with slight abdominal pain, her fears are confirmed. But we are not to enter into these views of the case; we are to consider the discharge as the prominent symptom, as the chief source of danger. We are to look upon the present abatement as an uncertain calm; and whatever advice we may give, whatever remedies we may employ, we are not to leave our patient until we have strongly enforced on her attendants the danger of negligence, and the necessity of giving early intimation should the hemorrhage be renewed. There is no disease to which the practitioner can be called, in which he has greater responsibility than in uterine hemorrhage. The most prompt and decided means must be used; the most patient attention must be bestowed; and, whenever he undertakes the management of a case of this kind, whatever be the situation of the patient, he must watch her with constancy, and forget all considerations of gain and trouble. His own reputation, his peace of mind, the life of his patient, and that of her child, are all at stake. I am doing the student the most

essential service, when I earnestly press upon his attention these considerations. And when I intreat, implore him to weigh well the proper practice to be pursued, the necessary care to be bestowed, I am pleading for the existence of his patient, and of his own honour and happiness. Procrastination, irresolution, or timidity, have hurried innumerable victims to the grave; whilst the rash precipitation of unfeeling men has only been less fatal, because negligence is more common than activity.

I shall endeavour to point out the proper treatment in the commencement of uterine hemorrhage, and the best method of terminating the case when the patient cannot be conducted with safety to the full time. After the patient is laid in bed, it is next to be considered how the hemorrhage is to be directly restrained, and whether we may be able to prevent a return. It is at all times proper to ascertain exactly the situation of the patient by examination, as we thus learn the state of the cervix and os uteri, and whether there be any tendency to labour; whether the discharge be stopped by a coagulum in the mouths of the vessels,* or by a large clot in the upper part of the vagina; whether the placenta be attached to the os uteri, or whether the membranes present. We likewise endeavour to ascertain the quantity of blood which has been lost—the rapidity with which it flowed—the effect which it has produced upon the mother or child—and the cause which appeared to excite the hemorrhage.

The first remedy which, upon a general principle, offers itself to our attention, is blood-letting. In those cases, where the attack has been produced by over-action of the vessels, or a plethoric condition; or where it seems to be kept up by these causes, this remedy employed early, and followed by other means, may be effectual not only in checking the present paroxysm, but also in preventing a return. By the timely and decided use of the lancet, much distress may be avoided, and both the mother and the child may be saved from

* We may conjecture that this is the case, if we find no clot in the vagina plugging the os uteri. We are not warranted to thrust the finger forcibly within the os uteri, in this examination; or to rub away the small coagula which may be formed within it, and which may be restraining the hemorrhage.

danger. But we are not to apply the remedy for one state to every condition; we must have regard to the cause, and consider how far the hemorrhage is kept up by plenitude or morbid activity of the vessels. In those cases where the attack is not excited by, or connected with, plethora, or undue action in the vascular system, venesection is not indicated. We have in these cases, which are, I believe, by far the most numerous, other means of safely, and powerfully moderating vascular action, without the detraction of blood, which, in this disease, it ought to be a leading principle to save as much as possible; and it must be impressed on the student, that venesection is rarely required in the disease in question. Whatever lessens materially or suddenly the quantity of blood, must directly enfeeble, and call for a new supply, otherwise the system suffers for a long time.

We shall find, that except under those particular circumstances which I have specified, and where we have ground to believe that the rupture of vessels has been dependent on their plenitude or over-action, the circulation may be speedily moderated by other means, and especially by the application of cold. This is to be made not only by applying cloths dipped in cold water to the back and vulva, but also by sponging over the legs, arms, and even the trunk, with any cold fluid; covering the patient only very lightly with clothes, and promoting a free circulation of cold air, until the effect upon the vessels be produced. After this we shall find no advantage, but rather harm from the further application of cold. All that is now necessary, is strictly and constantly to watch against the application of heat, that is, raising the temperature above the natural standard.

The extent to which this cooling plan is to be carried, must depend upon circumstances. In a first attack, it is in general to be used in all its vigour; but where the discharge, either towards the end of this attack, or in a subsequent paroxysm, has gone so far as to reduce the heat much below the natural standard, the vigorous application of cold might sink the system too much. In some urgent cases it may even be necessary to depart from our general rule, and apply warm cloths to the hands, feet, and stomach. This is the case where the discharge has been excessive, and been suf-

fered to continue profuse or for a long time, and where we are afraid that the system is sinking fast, and the powers of life giving way. There are cases in which some nicety is required in determining this point, and in these circumstances we must never leave our patient, but must watch the effects of our practice. This is a general rule in all hemorrhages, whatever their cause may have been, or from whatever vessel the blood may come. A cold skin and a feeble pulse never can require the positive and vigorous application of cold; but on the other hand, they do not indicate the application of heat, unless they be increasing, and the strength declining. Then we cautiously use heat to preserve what remains, not rashly and speedily to increase action beyond the present state of power.

When an artery is divided, it is now the practice to trust for a cure of the hemorrhage to compression, applied by a ligature. We cannot, however, apply pressure directly and mechanically to the uterine vessels, but we can promote coagulation, which has the same immediate effect. Rest and cold are favourable to this process, but ought only in slight cases to be trusted to alone. In this country it has been the practice to depend very much upon the application to the back or vulva, of cloths dipped in a cold fluid, generally water, or vinegar and water; but these are not always effectual, and sometimes, from the state of the patient, are not admissible. Astringent injections are seldom of benefit in any discharge which deserves the name of hemorrhage. They commonly do good in a stillicidium, rather troublesome from its duration, than hazardous from its extent. In urgent cases they are hurtful, by washing away coagula.

Plugging the vagina with a soft handkerchief,* answers every

* The insertion of a small piece of ice in the first fold of the napkin, is attended with great advantage, and has often a very powerful effect. Dr. Hoffman employed the introduction of lint, dipped in solution of vitriol, but this was rather as an astringent than a plug, and he does not propose it as a general practice. He considers, that he was obliged to have recourse *ad anceps et extremum auxilium.*—Vide Opera Omnia, T. IV. Leroux employed the plug more freely. —Vide Observations sur les Pertes, 1776. Some modern writers hold it in little estimation; and Gardien says, that when the placenta is attached over the os uteri it is injurious, by exciting the uterus to dilate the mouth. T. II. p. 404.

purpose which can be expected from them; and whenever a discharge takes place to such a degree as to be called a flooding, or lasts beyond a very short time, this ought to be resorted to. The advantage is so great and speedy, that I am surprised that it ever should be neglected. I grant that some women may, from delicacy or other motives, be averse from it; but every consideration must yield to that of safety: and it should be impressed deeply on the mind of the patient, as well as of the practitioner, that blood is most precious, and not a drop should be spilled which can be preserved. Unless the flooding shall in the first attack be permanently checked, which, when the separated vessels are large or numerous, is rarely accomplished, we may expect one or more returns before expulsion can be accomplished. The more blood, then, that we allow to be lost at first, the less able shall the patient be to support the course of the disease, and the more unfavourable shall delivery, when it comes to be performed, prove to her and to the child. It is of consequence to shorten the paroxysm as much as possible; and therefore, when circumstances will permit, we should make it a rule to have from the first a careful nurse, who may be instructed in our absence to use the napkin without delay, should the hemorrhage return.

But whilst I so highly commend, and so strongly urge the use of the plug, I do not wish to recommend it to the neglect of other means, or in every situation. In the early attacks of hemorrhage, when the os uteri is firm, and manual interference is improper, I know of no method more safe or more effectual for restraining the hemorrhage and preserving the patient. But when the hemorrhage has been profuse, or frequently repeated, and the circumstances of the patient demand more active practice, and point out the necessity of delivery, then the use of the plug cannot be proper. If trusted to, it may be attended with fatal and deceitful effects. We can indeed restrain the hemorrhage from appearing outwardly; but there have been instances, and these instances ought to be constantly remembered, where the blood has collected within the uterus, which, having lost all power, has become relaxed, and been slowly enlarged with coagula; the strength has

decreased—the bowels become inflated—the belly swelled beyond its size in the ninth month, although the patient may not have been near that period; and in these circumstances, whilst an inattentive practitioner has perhaps concluded that all was well with regard to the hemorrhage, the patient has expired, or only lived long enough to permit the child to be extracted. All practical writers warn us against internal flooding; nay, so far do some carry their apprehension, that they advise us to raise the head of the child, and observe whether blood or liquor amnii be discharged;* an advice, however, to which I cannot subscribe, because in those cases where the membranes have given way, or been opened, the head cannot be thus moveable, nor these trials made, unless we have waited until a dangerous relaxation has taken place in the uterine fibres; and if, on the other hand, we have delivery in contemplation, it is our object to confine the liquor amnii as much as possible, until we turn the child. Blood may also collect in the upper part of the vagina, to a dangerous quantity, when the plug has been trusted to, too late.

Besides using these means, it will also, especially in a first attack, and where we have it not in contemplation to deliver the woman, be proper to exhibit an opiate,*(d)* in order to allay irritation; and this is often attended with a very happy effect. On this subject long experience enables me to speak with decision, and to recommend, in every instance where the hemorrhage does not depend on plethora, the exhibition of a full dose of laudanum, which tranquilises the patient, allays irritation, and checks, for the time, the discharge.

Such are the most effectual methods of speedily or immediately stopping the violence of the hemorrhage. The next points for consideration are, whether we can expect to carry the patient

* Vide Dr. Johnson's System of Midwifery, p. 157. and Dr. Leake's Diseases of Women, Vol. II. p. 280.

(*d*) In the exhibition of opiates in uterine hemorrhagies generally, we would advise their combination with ipecacuanha, in the proportion of half a grain of the latter to about two grains of opium; to be repeated more or less frequently, according to the circumstances of the case. Vide Barton's Edit. of Cullen's Mat. Med. Vol. ii. p. 334, and Chapman's Edit. of Burns.

safely to the full time, and by what means we are to prevent a renewal of the discharge.

It may, I believe, be laid down as a general rule, that when a considerable portion of the decidua has in the seventh month, or later, been separated, the hemorrhage, although it may be checked, is apt to return. When a part of the placenta has been detached, and more especially if that organ be fixed over the os uteri, gestation cannot continue long; for either such injury is done to the uterus as produces expulsion and a natural cure, or the woman bleeds to death, or we must deliver, in order to prevent that dreadful termination.

If the discharge be in small quantity, and have not flowed with much rapidity—if it stop soon or easily—if no large clots are formed in the vagina—if the under part of the uterus has its usual feel, showing that the placenta is not attached there, and that no large coagula are retained within the os uteri—if the child be still alive—if there be no indication of the accession of labour—and if the slight discharge which is still coming away be chiefly watery, we may, in these circumstances, conclude, that the vessels which have given way are not very large, and have some reason to expect, that by care and prudent conduct, the full period of gestation may be accomplished. It is difficult to say, whether, in this event the uterus forms new vessels to supply the place of those which have been torn, and whether re-union be effected by the incorporation of those with corresponding vessels from the chorion. In the early months we know that re-union may take place; but when, in the advanced period of pregnancy, the decidua has become very thin, soft, and almost gelatinous, it is not established that the circulation may be renewed. At all events, we know that the power of recovery or reparation is very limited, and can only be exerted when the injury is not extensive. The means for promoting re-union of the uterus and decidua, are the same with those which we employ for preventing a return of the hemorrhage; and these we advise, even when we have little hope of effecting re-union, and making the patient go to the full time, because it is our object to prevent, as much as possible, the loss of blood.

When the placenta is partly separated, all the facts of which we are in possession, are against the opinion that re-union can take place. If the spot be very trifling, and the vessels not large, we may have no return of the bleeding; a small coagulum may permanently restrain it; but if the separation be greater, and the placenta attached low down, or over the os uteri, the patient cannot go to the full time, unless that be very near its completion. We judge of the case by the profusion and violence of the discharge; for all great hemorrhages proceed from the separation of the placenta; and by the feel of the lower part of the uterus,—by the quantity of clots, and the obstinacy of the discharge, which may perhaps require even actual syncope to stop the paroxysm; a circumstance indicating great danger.

The best way by which we can prevent a return, is to moderate the circulation, and keep down the actions of the system to a proper level with the power. The propriety of attending to this rule will appear, if we consider, among other circumstances, that when a patient has had an attack of flooding, a surprise, or any agitation which can give a temporary acceleration to the circulation, will often renew the discharge. The action of the arteries depends very much upon that of the heart; and the action of this organ again is dependent on the blood. When much blood is lost, the heart is feebly excited to contraction, and in some cases it beats with no more force than is barely sufficient to empty itself. This evidently lessens the risk of a renewal of the bleeding; and in several cases, as, for example, in hemoptysis, we, by suddenly detracting a quantity of blood, speedily excite this state of the heart. Whatever tends to rouse the action of the heart, tends to renew hemorrhage; and if the proposition be established, that the rapidity with which the strength and action of the vessels are diminished is much influenced by the rapidity with which a stimulus is withdrawn, the converse is also true; and we should find, were it practicable to restore the quantity of blood as quickly as it has been taken away, that the same effect would be produced on the action of the heart, as if a person had taken a liberal dose of wine. It has been the practice to give nourishing diet to restore the quantity of blood; but until the rup-

tured vessels be closed, or the tendency to hemorrhage stopped, this must be hurtful. It is our anxious wish to prevent the loss of blood; but it does not thence follow, that, when it is lost, we should wish rapidly to restore it. This is against every principle of sound pathology; but it is supported by the prejudices of those who do not reflect, or who are ignorant of the matter. When a person is reduced by flooding, even to a slight degree, taking much food into the stomach, gives considerable irritation; and if much blood be made, vascular action must be increased. What is it which stops the flow of blood, or prevents for a time its repetition? Is it not diminished force of the circulation which cannot overcome the resistance given by the coagula? Does not motion displace these coagula, and renew the bleeding? Does not wine increase for a time the force of the circulation, and again excite hemorrhage? Is it not conformable to every just reasoning, and to the experience of ages, that full diet is dangerous when vessels are opened? Do we not prohibit nourishing food and much speaking in hemorrhage from the lungs? And can nourishing diet and motion be proper in hemorrhage from the uterus? If it were possible to restore in one hour the blood which has been lost in a paroxysm of flooding, it is evident, that, unless the local condition of the parts were altered, the flooding would, at the end of that hour, be renewed.

The diet should be light, mild, given in small quantity at a time, so as to produce little irritation;* and much fluid, which would soon fill the vessels, should be avoided. We shall do more good by avoiding every thing which can stimulate and raise action,† than

* Such as animal jellies, sago, toasted bread, hard biscuit, &c. These articles, given at proper intervals, are sufficient to support the system without raising the action too much.

† The system, with its power of action, may, for illustration, be compared to a man with his income. He who had formerly two hundred pounds per annum, but has now only one, must, in order to avoid bankruptcy, spend only one half of what he did before; and if he do so, although he has been obliged to live lower, yet his accounts will be square at the end of the year.—The same applies to the system. When its power is reduced, the degree of its action must also be reduced; and, by carefully proportioning the one to the other, we may often con-

by replenishing the system rapidly, and throwing rich nutriment into the stomach.

It is, however, by no means my intention to say, that we must, during the whole remaining course of gestation, (provided that that go on, the attack having been permanently cured) keep down the quantity of blood. I only mean that we are not rapidly to increase it. Even where the strength has been much impaired by the profusion of the discharge, or the previous state of the system, it is rather by giving food so as to prevent further sinking, than by cramming the patient, that we promote recovery; and I beg it to be remembered, that although I talk of the management of those who are much reduced, yet I am not to be understood as in any degree encouraging the practice of delay, and allowing the patient to come into this situation of debility; but when we find her already in this state, it is not by pouring cordials and nutriment profusely into the stomach, that we are to save her; it is by giving mild food, so as gradually to restore the quantity of blood and the strength; it is by avoiding the stimulating plan on the one hand, and the starving system on the other, that we are to carry her safely through the danger.

Some medicines possess a great power over the blood vessels, and enable us, in hemorrhage, to cure our patient with less expense of blood than we could otherwise do. Digitalis is of this class, and may be given for a short time, with advantage, in flooding, where the pulse indicates increased vascular action, and when we do not mean to proceed directly to delivery. But when the discharge has been trifling, and the pulse is slow, and perhaps feeble, digitalis is unnecessary even from the first, or may be hurtful; and if, in the progress of the disease, the stomach have become

duct a patient through a very great and continued degree of feebleness. At the same time, it must be observed, that as there is an income so small as not to be sufficient to procure the necessaries of life, so also may the vital energy be so much reduced, as to be inadequate to the performance of those actions which are essential to our existence, and death is the result. But surely he who should attempt to prevent this by stimulating the system, would only hasten the fatal termination. Does not heat overpower and destroy those parts which have been frost-bit?

affected, and the patient is sick, inclined to vomit, or faintish, or the pulse feeble and small, it is likewise improper.

In those cases which demand it, when the pulse is sharp, and throbbing, and frequent, it may be given in the form of tincture. Two drachms may be added to a four-ounce mixture, and a tablespoonful given every two hours, watching the effect, and diminishing the dose when necessary. It ought seldom to be continued above two days, and sometimes all the benefit to be expected from it is derived in twenty-four hours.(*e*)

At the same time that we thus endeavour to diminish the action of the vascular system, we must also be careful to remove, as far as we can, every irritation. I have already said all that is necessary with regard to heat, motion, and diet. The intestinal canal must also be attended to, and accumulation within it should be carefully prevented by the regular exhibition of laxatives. A costive state is generally attended with a slow circulation in the veins belonging to the hepatic system, and of these the uterine sinuses form a part. If the arterial system be not proportionally checked,

(*e*) Our author has here omitted to mention, the powerful effects of the acetate of lead in restraining uterine hemorrhage.

The dose must depend upon the circumstances of the case, and the judgment of the practitioner. In a general way we may say, that two or three grains may be given at a time, and repeated more or less frequently according to the urgency of the symptoms. It should be combined with a portion of opium.

Professor Barton, who has called the attention of American practitioners to this powerful article of the materia medica in restraining internal hemorrhage, recommends the combining with it a portion of ipecacuanha. For his opinion on this subject, we must refer the student to the Professor's edition of Cullen's Materia Medica, vol. ii. p. 20, 21, and 334. Other practitioners, among whom is Dr. Chapman, in these cases place considerable confidence in a combination of opium and ipecacuanha, in the proportion of two grains of the former to half a grain of the latter, to be repeated every two hours.

From my own experience, I should be induced to decide in favour of the acetate of lead, when combined as above directed.

Dr. Kuhn informed me that the late Dr. Glentworth of this city, placed the greatest reliance on yarrow-tea, or a strong decoction of yarrow (Achillea Millefolium, L.) in uterine hemorrhage, and said that he never was disappointed in his expectations of a cure after the proper use of this article of the materia medica. Instances of its good effects in hemorrhagies are mentioned by several of the German physicians, particularly by Stahl and Hoffman.

this sluggish motion is apt, by retarding the free transmission along the meseraic veins, to excite the hemorrhage again.

Uneasiness about the bladder or rectum, or even in more distant parts, should be immediately checked; for in many cases hemorrhage is renewed by these irritations. In those cases, or where the patient is troubled with cough, or affected with palpitation, or an hysterical state, much advantage may be derived from the exhibition of opiates. In many instances, where an attack of flooding is brought on by some irritation affecting the lower part of the uterus in particular, or the system in general, or where the bowels are pained, and the pulse not full nor strong, rest, cool air, and an adequate dose of tincture of opium will terminate the paroxysm, and perhaps prevent a return. This is especially the case, if only a part of the decidua have been separated, and the discharge have not been profuse. When the vascular system is full, venesection is necessary before the anodyne be administered, and the digitalis may either succeed the opiate or be omitted, according to the state of the pulse and of the stomach.

It may happen that we have not been called early in a first attack, and that some urgent symptom has appeared. The most frequent of these, is a feeling of faintness or complete syncope. This feeling often arises rather from an affection of the stomach than from absolute loss of blood; and in this case it is less alarming than when it follows copious hemorrhage. In either case, however, we must not be too hasty in exhibiting cordials. When the faintishness depends chiefly upon sickness at the stomach, or feeling of failure, circumstances which may accompany even a small discharge, it will be sufficient to give a few drops of hartshorn in cold water, and sprinkle the face with cold water: a return is prevented by an anodyne draught, or opium pill. When it is more dependent on absolute loss of blood, we may find it necessary to give a full dose of opium or laudanum, with the addition of small quantities of wine warmed with aromatics; but the latter, even in this case, must not be given with a liberal hand, nor too frequently repeated.* It is

* As syncope and loss of blood have both the effect of relaxing the muscular fibre, as is well known to surgeons, it may be supposed that they should increase

scarcely necessary for me to add, that we are also to take immediate steps, by the use of the plug, &c. for restraining the discharge. This I may observe once for all.*(f)*

Complete syncope is extremely alarming to the bye-standers: and, if there have been a great loss of blood, it is indeed a most dangerous symptom. It must at all times be relieved, for although faintness be a natural mean of checking hemorrhage, yet absolute and prolonged syncope is hazardous. We must keep the patient at perfect rest, in a horizontal posture, with the head low, open the windows, sprinkle the face smartly with cold vinegar, apply volatile salts to the nostrils, and give sixty or eighty drops of laudanum internally, and occasionally a spoonful of warm wine.

Universal coldness is also a symptom which must not be allowed to go beyond a certain degree, and this degree must be greatly determined by the strength of the patient, and the quantity and rapidity of the discharge. When the strength is not previously much reduced, a moderate degree of coldness is, if the hemorrhage threaten to continue, of service; but when there has been a great loss of blood, then universal coldness, with pale lips, sunk eyes, and approaching deliquium, may too often be considered as a forerunner of death. When we judge it necessary to interfere, we should apply warm cloths to the hands and feet, a bladder half filled with tepid water to the stomach, and give some hot wine and water inwardly.

Vomiting is another symptom which sometimes appears. It proceeds very generally from the attendants having given more

the flooding by diminishing the contraction of the uterus, if that have already taken place. But the contrary is the case, for by allowing coagula to form, syncope restrains hemorrhage, and therefore ought not to be too rapidly removed, in a first attack, and before the os uteri has become dilatable.

(f) In restraining uterine hemorrhage, we should not forget that injections thrown up the vagina, and if possible into the uterus, may have a considerable effect in repressing the discharge. In this way I have known solutions of the acetate of lead, of the sulphate of alumine, and a strong decoction or infusion of galls, produce salutary effects. A solution of the acetate of lead in cold water, combined with laudanum, may also be thrown up by enema, as recommended by Dr. Dewees.

nourishment or fluid than the stomach can bear, or from a gush of blood taking place soon after the patient has had a drink. It in this case is commonly preceded by sickness and oppression, which are most distressing, and threaten syncope, until relief is obtained by vomiting. Sometimes it is rather connected with an hysterical state, or with uterine irritation. If frequently repeated, it is a debilitating operation, and by displacing clots may renew hemorrhage; but sometimes it seems fortunately to excite the contraction of the uterus, and gives it a disposition to empty itself. For abating vomiting, we may apply a cloth dipped in laudanum, and camphorated spirits of wine, to the whole epigastric region; or give two grains of solid opium, or even more, if the weakness be great. Sometimes a little infusion of capsicum is of service. It should just be gently pungent. In flooding it is of importance to pay much attention to the state of the stomach, and prevent it from being loaded; on the other hand, we must not let it remain too empty, nor allow its action to sink. Small quantities of pleasant nourishment should be given frequently. We thus prevent it from losing its tone, without oppressing it, or filling the system too fast.

Hysterical affections often accompany protracted floodings, such as globus, pain in the head, feeling of suffocation, palpitation,* retching, in which nothing but wind is got up, &c. These are best relieved by some fœtid or carminative substance conjoined with opium. The retching sometimes requires an anodyne clyster, or the application of a camphorated plaster† to the region of the stomach.

After having made these observations on the management of flooding, and the best means of moderating its violence, of preventing a return, and of relieving those dangerous symptoms which

* The quantity of blood lost is sometimes so great as to do irreparable injury to the heart, and ever after to impede its action. One well marked instance of this is related by Van Swieten, in his commentary on Aph. 1304, where for twelve years the woman, after a severe flooding, could not sit up in bed without violent palpitation and anxiety.

† This may be made by melting a little adhesive plaster, and then adding to it a large proportion of camphor, previously made into a thick liniment by rubbing it with olive oil.

sometimes attend it, I next proceed to speak of the method of delivering the patient when that is necessary. I have separated the detail of the medical treatment of a paroxysm from the consideration of the manual assistance, which may be required; because, however intimately connected the different parts of our plan may be, in actual practice, it is useful, in a work of this kind, in order to avoid confusion, that I lay them down apart.

As some peculiarities of practice arise from the implantation of the placenta over the os uteri, I shall confine my present remarks to those cases in which the membranes are found at the mouth of the womb, desiring it to be remembered, however, that this circumstance does not necessarily indicate that the hemorrhage does not proceed from separation of the placenta, which may be fixed very near the cervix, although it cannot be felt.

The operation of delivering the child is not difficult to describe or to perform. I am generally in the practice of giving, a quarter of an hour before I begin, fifty drops of tincture of opium, or if the patient be much reduced, I give even eighty. The hand, previously lubricated, is then to be slowly and gently introduced completely into the vagina. The finger is to be introduced into the os uteri, and cautiously moved so as to dilate it: or if it has already dilated a little more, two fingers may be inserted, and very slow and gentle attempts made at short intervals to distend it; and the practitioner will do well to remember, that he will succeed best when he rather acts so as to stimulate the uterus and make it dilate its mouth, than forcibly to distend it. On the part of the operator, is demanded much tenderness, caution, firmness, and composure; on the part of the patient is to be desired patience and resolution. The operator is to keep in mind, that painful dilation is dangerous, it irritates and inflames the parts, and that the woman should complain rather of the uterine pains which are excited, than of the fingers of the practitioner. More or less time will be required fully to dilate the os uteri, according to the state in which the uterus was when the operation was begun. If the os uteri is soft and pliable, and has already, by slight pains, been in part distended, a quarter of an hour, or perhaps only a few minutes, will often be sufficient for this purpose; but if it has

scarcely been affected before by pains, and is pretty firm, though not unyielding, then half an hour may be required. I speak in general terms, for no rule can be given applicable to every case. Not unfrequently, although the patient have felt scarcely any pains, and certainly no regular pains, the os uteri will be found as large as a penny piece, and its margin soft and thin. The os uteri being sufficiently dilated, the membranes are to be ruptured, the hand introduced, the child slowly turned and delivered, as in footling cases; endeavouring rather to have the child *expelled* by uterine contraction than *brought away* by the hand. Hasty extraction is dangerous, for the uterus will not contract after it. And, therefore, if when we are turning, we do not feel the uterus acting, we must move the hand a little, and not begin to deliver until we perceive that the womb is contracting. The delivery must be but slow until the breech is passing; then we must be careful that the cord be not too long compressed before the rest of the child be born. The child being removed, and the belly properly supported, and gently pressed on by an assistant, the hand should again be cautiously introduced into the womb, and the two knuckles placed on the surface of the placenta, so as to press it a little, and excite the uterus to separate it. The hand may also be gently moved in a little time, and the motion repeated at intervals, so as to excite the uterus to expel its contents; but upon no account are we to separate the placenta and extract it. This must be done by the uterus: for we have no other sign that the contraction will be sufficient to save the woman from future hemorrhage. The whole process, from first to last, must be slow and deliberate, and we are never to lose sight of our object, which is to excite the expulsive power of the uterus. It is not merely to empty the uterus—it is not merely to deliver the child, that we introduce our hand: all this we may do, and leave the woman worse than if we had done nothing. The fibres must contract and press upon the vessels; and as nothing else can save the patient, it is essential that the practitioner have clear ideas of his object, and be convinced on what the security of the patient depends.

But to teach the method of delivery, and say nothing of the circumstances under which it is to be performed, would be a most

dangerous error. I have, in the beginning of this section, pointed out the effect of hemorrhage, both on the constitution and on the uterus; and I have stated, that the action of gestation is always impaired by a certain loss of blood, and a tendency to expulsion brought on. But before the uterine contraction can be fully excited, or become effective, the woman may perish, or the uterus be so enfeebled as to render expulsion impossible. Whilst then we look upon the one hand to the induction of contraction, we must not on the other delay too long. We must not witness many and repeated attacks of hemorrhage, sinking the strength, bleaching the lips and tongue, producing repeated fainting fits, and bringing life itself into immediate danger. Such delay is most inexcusable and dangerous; it may end in the sudden loss of mother and child; it may enfeeble the uterus, and render it unable afterwards to contract; or it may so ruin the constitution, as to bring the patient, after a long train of sufferings, to the grave.

Are we then uniformly to deliver upon the first attack of flooding, and forcibly open the os uteri? By no means: safety is not to be found either in rashness or procrastination.

The treatment which I have pointed out, will always secure the patient until the delivery can be safely accomplished. As long as the os uteri is firm and unyielding—as long as there is no tendency to open, no attempt to establish contraction, it is perfectly safe to trust to the plug, rest, and cold. But I must particularly state to the reader, that the os uteri may dilate without regular pains; and in almost every instance it does, whether there be or be not pains, become dilatable. Did I not know the danger of establishing positive rules, I would say, that as long as the os uteri is firm, and has no disposition to open, the patient can be in little risk, if we understand the use of the plug; we may even plug the os uteri itself, which will excite contraction. But if the patient be neglected, then I grant that long before a tendency to labour or contraction be induced, she may perish. I am not, however, considering what may happen in the hands of a negligent practitioner, for of this there would be no end, but what ought to be the result of diligence and care.

It is evident, that when the uterus has a disposition to contract, and the os uteri to open, delivery must be much safer and easier than when it is still inert, and the os uteri hard.

We may, with confidence, trust to the plug, until these desirable effects be produced; and in some instances, we shall find, that by the plug alone we may secure the patient: the contraction may become brisk, if we have prevented much loss of blood, and expulsion may naturally take place. Who would, in those circumstances, propose to turn the child, and deliver it? Who would not prefer the operation of nature to that of the accoucheur? To determine in any individual case whether this shall take place, or whether delivery must be resorted to, will require deliberation on the part of the practitioner. If he have used the plug early and effectually, and the pains have become brisk, he has good reason to expect natural expulsion; and the labour must be conducted on the general principles of midwifery. But if the uterus have been enfeebled by loss of blood—if the pains are indefinite—if they have done little more than just open the os uteri, and have no disposition to increase, then he is not justified in expecting that expulsion shall be naturally and safely accomplished, and he ought to deliver. When he dilates the os uteri, he excites the uterine action, and feels the membranes become tense. But he must not trust to this, he must finish what he has begun.

Thus it appears, that by the early and effective use of the plug, by filling the vagina with a soft napkin, or with tow, we may safely and readily restrain the hemorrhage, until such changes have taken place on the os uteri as to render delivery easy; and then we either interfere or trust to natural expulsion, according to the briskness and force of the contraction, and state of the patient.

By this treatment, we obtain all the advantage that can be derived from the operations of nature; and, where these fail, are enabled to look with confidence to the aid of artificial delivery.

But it may happen that we have not had an opportunity of restraining the hemorrhage early; we may not have seen the patient until she has suffered much from the bleeding.* In this case, we shall

* We are not to confine our attention to the quantity which has been lost, but

generally be obliged to deliver, and must, upon no account, delay too long; yet, if the os uteri be very firm, without disposition to open, and require hazardous force to dilate it, we shall generally find that the sinking is temporary: we may still trust for some time to the plug, and give opiates to support strength.

Hemorrhage is naturally restrained by faintness. A repetition is checked in the same way; and faintness takes place sooner than formerly. In one or two attacks, the uterus suffers, and the os uteri becomes dilatable. Slight pains come on, or are readily excited by attempts to distend the os uteri. Syncope then will, in general, even when the plug has not been used, and the patient has been neglected, restrain hemorrhage, and prevent it from proving fatal until the os uteri has relaxed; but a little delay beyond that period will destroy the patient; and it is possible, by giving wine, and otherwise treating her injudiciously, to make hemorrhage prove fatal, even before this takes place. But although I have considered it as a general rule, that where the os uteri is firm and unyielding, we may, notwithstanding present alarm, trust some time to the plug, yet I beg it to be remembered, that there may be exceptions to this rule; for the constitution may be so delicate, and the hemorrhage so sudden, or so much increased by stimulants, as to induce a permanent effect, and make it highly desirable that delivery should be accomplished: but such instances are rare; and although I have spoken of the effects of syncope in restraining hemorrhage, I hope it will not be imagined by the student that I wish to make him familiar with this symptom. It is very seldom safe, when we have our choice, to wait till syncope be induced; and if it have occurred, it is not usually prudent to run the risk of a second attack.

The old practitioners, not aware of the value of the plug, nor acquainted with the sound principles of physiology, had no fixed rule relating to delivery, but endeavoured to empty the uterus early; but it was uniformly a remark, that those women died who

to the effect it has produced; and this will *ceteris paribus* be great in proportion as the hemorrhage has been sudden.

had the os uteri firm and hard.* What is this but to declare, that the rash and premature operation is fatal? It is an axiom which should be deeply engraved on the memory of the accoucheur, and which should constantly influence his conduct. Pain and suffering are the immediate consequence of the practice; whilst a repetition of the flooding after delivery, or the accession of inflammation, are the messengers of death.

It was the fatal consequence of this blind practice that suggested to M. Puzos the propriety of puncturing the membranes, and thus endeavouring to excite labour. His reasoning was ingenious; his proposal was a material improvement on the practice which then prevailed. The ease of the operation, and its occasional success, recommend it to our notice; but experience has now determined that it cannot be relied on, and that it may be dispensed with. If we use it early, and on the first attack, we do not know when the contraction may be established; for, even in a healthy uterus, when we use it on account of a deformed pelvis, it is sometimes several days before labour be produced. We cannot say what may take place in the interval. The uterus being slacker, the hemorrhage is more apt to return, and we may be obliged, after all, to have recourse to other means, particularly to the plug. Now, we know that the plug will, without any other operation, safely restrain hemorrhage, until the os uteri be in a proper state for delivery.† The proposal of M. Puzos then is, I apprehend, inadmissible before this time. If, after this, there be occasion to interfere, it is evident that we must desire some interference which can be depended on, both with respect to time and degree. This method can be relied on in neither; for we know not how long it may be

* Vide the Works of Mauriceau, Peu, &c.

† The ingenious M. Alphonse Le Roy seems much inclined to trust almost entirely to the plug, and supposes that the blood will act as a foreign body, and excite contraction; but this, as a general doctrine, must be greatly qualified. Respecting the proposal of M. Puzos, he observes, "Puzos, en conseillant assez hardiment de Percer les eaux, n'avoit d'autres vues que la contraction de la matrice, qui est la suite de cette operation et la cessation de la perte, et il la conseilla même dans les cas des pertes qu'arrivent avant terme. Mais un grand nombre de femmes sont peries par l'effect de cette même pratique." Leçons sur les pertes de sang, p. 45.

of exciting contraction, nor whether it may be able to excite effective contraction after any lapse of time. If it fail, we render delivery more painful, and consequently more dangerous to the mother, and bring the child into hazard. It has been observed, in objection to this, by Dr. Denman,* that if turning be difficult, the flooding will be stopped by the contraction of the womb. But we know that the uterus, emptied of its water, may embrace the child so closely as to render turning, if not difficult, at least painful, and yet not be acting so briskly as to restrain flooding: nothing but brisk contraction can save a patient in flooding, if the vessels be large or numerous. Spasmodic action may also take place.

The only case then which remains to be considered, is that in which pains come on, and expulsion is going forward. Now, in this case, the flooding is stopped either by the contraction or by the plug, and the membranes burst in the natural course of labour; after which it is speedily concluded. Here, then, interference is not required; but if, after going on in a brisk way for some time, the pains abate a little, which often happens even in a natural labour, it will be proper to rupture the membranes, if we have reason to think that a slight stimulus to the uterus would renew its action: and in determining this, the practitioner must be influenced by the previous discharge; for if the uterus have been much reduced by it in its vigour, it will be less under the influence of a stimulus; and if, upon the present diminution of the pains, the flooding is disposed to return, I should think that we surely ought to trust rather to the hand, which can stimulate in the necessary degree, and finish the process with safety, than to a method which is much more uncertain and less under our command.†

The proposal of M. Puzos then will, if this reasoning be just, be

* Introduction to the Practice of Midwifery, Vol. II. p. 310.

† In those cases where the placenta presents, few practitioners would think of trusting to the evacuation of the liquor amnii; they would deliver. If then delivery be considered as safe and proper in one species of flooding, it cannot be dangerous in the other; and whenever interference in the way of operation is necessary, the security afforded by the introduction of the hand will much more than compensate for any additional pain. But even in this respect, the two operations are little different, if properly performed.

very limited in its utility. Its simplicity gave me at first a strong partiality in its favour; but I soon found cause to alter my opinion.

There still remains a most important question to be answered. In those cases where the patient has been allowed to lose a great deal of blood frequently and suddenly, when the strength is gone, the pulse scarcely to be felt, the extremities cold, the lips and tongue without blood, and the eye ghastly, shall we venture to deliver the woman? Shall we, by plugging, endeavour to prevent farther loss, and by nourishment and care recruit the strength; or empty the uterus, and then endeavour to restore the loss? We have only a choice of two dangers. The situation of the patient is most perilous, and I have in practice weighed the argument with that attention which the awful circumstances of the case required. I think myself justified in saying, that we give both mother and child the best chance of surviving by a cautious delivery. For in these cases the uterus is almost torpid, it possesses no tonic contraction;* the very continuance of the ovum within it is more than it can bear. The general system is completely exhausted, and cannot support its condition long. I have never known a woman live twenty-four hours in these circumstances.

On the other hand, I grant, that it is possible the woman may die in the act of delivery, or very soon after it; but if she can be supported for two days, we may have hopes of recovery. By a very slow and cautious delivery, and by endeavouring thereafter, by retaining the hand for some time in the womb, to excite its action, so as to prevent discharge afterwards, we not only remove the irritation of the distended womb, but we likewise take away a receptacle of blood. During the contraction of the uterus, the blood in its sinuses will be thrown into the system, and tend to support it. Part, no doubt, will escape; but by keeping the hand in the uterus, by supporting the abdomen with a compress, and exciting the uterine action by cold applications to the belly, we may prevent a great loss. When to these considerations we add the additional

* The use of the plug cannot here certainly prevent the farther loss of blood, for the uterus affords no resistence, the hemorrhage continues, and after death large coagula will be found within the womb.

chance which the child has for life, our practice, I apprehend, will, in this very hazardous case, be decided. When the pulse becomes firmer and fuller upon the contraction of the uterus, the risk from debility is diminished. A full dose of laudanum ought uniformly to be given previous to delivery, as I have formerly advised; and afterwards, forty drops of the same medicine are to be given at stated intervals, in order to support the strength. In the course of two days, several hundred drops may be given, without affecting the head, or producing stupor. If the stomach be irritable, solid opium may be given, or an opiate-clyster is to be administered. This practice does not rest on my own experience alone, but is corroborated also by that of Dr. Hamilton, the justly celebrated Professor of Midwifery in Edinburgh. Small quantities of light nourishment must also be given frequently, and a state of rest strictly enforced, in so much, that the patient, for some time after delivery, ought not even to be shifted, but only a firm bandage applied over the abdomen, in order to support the muscles and contained viscera; and this is a precaution which never ought to be omitted.

At one time it was supposed that the placenta was, in every instance, attached originally to the fundus uteri, and that it could only be found presenting in consequence of having been loosened and falling down. This accident was supposed to retard the birth of the child, by stopping up the passage, and also was considered as dangerous on account of the flooding which attended it. On this account Daventer endeavoured to accelerate the delivery by tearing the placenta, or rupturing the membranes when they could be found. This was a dangerous practice, and very few survived when it was employed. Mr. Gifford and M. Levret* were among the first who established it as a rule that the placenta did not fall

* Je m'engage a prouver 1mo. que le placenta s'implante quelquefois sur la circonference de l'orifice de la matrice; c'est-a-dire, sur celui qui du col va joindre l'interieur de ce viscere, et non sur celui qui regarde de la vagin.

2do. Qu'en ce cas la perte de sang est *inevitable* dans les dernier tems de la grossesse.

Et 3tio. Qu'il n'y a pas de voye plus sure pour remedier a cet accident urgent que de fair l'accouchement forcé.—L'art des Accouchemens, p. 343.

down, but was, from the first, implanted over the os uteri: and the latter gentleman published a very concise and accurate view of the treatment to be pursued.

We know, that, during the eighth month of gestation, very considerable changes take place about the cervix uteri. It is completely developed and expanded; and in the ninth month, very little distance intervenes betwixt the ovum and the lips of the os uteri. These changes cannot easily take place without a rupture of some of the connecting vessels; for either the placenta does not adapt itself to the changes in the shape of the cervix, or, which happens more frequently, some slight mechanical cause, or action of the fibres about the os uteri, produces a rupture.

This rupture may doubtless take place at any period of pregnancy,* but it is much more frequent in the end of the eighth and beginning of the ninth month, than at any other time. But whether the separation happens in the seventh, eighth, or ninth month, the consequent hemorrhage is always profuse, and the effects most alarming. The quantity, but especially the rapidity, of the discharge, very frequently produce a tendency to faint, or even complete syncope, during which the hemorrhage ceases, and the woman may continue for several days without experiencing a renewal of it. In some instances she is able to sustain many and repeated attacks, which may take place daily for some weeks. These, however, it is evident, cannot be very severe, and the strength must originally have been great. In other instances, the woman never gets the better of the first attack. It, indeed, diminishes, but does not altogether leave her, and a slight exertion renews it in its former violence. But whether the patient suffer much or little in the first attack—whether she be feeble or robust, the practice must be prompt, and the most solemn call is made upon the practitioner for activity. The moment that a discharge of blood takes place, he ought to ascertain, by careful examination, the precise nature of the case, and must take instant steps

* In some cases, hemorrhage has taken place so early as the third month. By proper means this has been stopped, and the patient has continued well for some months, when the flooding has returned, and the placenta been discovered to present.

for checking it, if nature have not already accomplished that event.

If the os uteri be firm and close in a first attack, we ought to use the plug, which will restrain the hemorrhage, and insure the present safety of the patient. If this practice have been immediately followed, she shall in general soon recover, and the length of time for which she shall remain free from a second attack will depend very much upon the care which is taken of her; but sooner or later the attack must and will return. If the uterus have been injured in its action by the first attack, this will generally be attended with very slight dull pains, and we shall feel the os uteri more open and laxer than usual; but if the first and second discharges have been promptly checked, it may be later before these effects be perceived; but the moment that they are produced, we ought to deliver; and it should even be a rule, that where they are not likely soon to take place, and the discharge has been profuse and rapid, and produced those effects on the system which I have already pointed out, as the consequence of dangerous hemorrhage, we must not delay until pains begin to open the os uteri. Fortunately, we are not often obliged to interfere thus early; for by careful management, and the use of the plug, we can secure our patient.

Although I have said that we may wait safely until the os uteri begins to open, and asserted, that no woman can die from mere hemorrhage, before the state of the os uteri admit of delivery, I must yet add, on this important subject, that this state does not consist merely in *dilatation*, for it may be very little dilated, but in *dilatability;(g)* we may safely deliver whenever the hand can be introduced without much force. A forcible introduction of the hand

(g) Rigby, a respectable surgeon of Norwich, in England, is entitled, as we believe, to the credit of first promulgating this distinction, which is of great importance to be attended to in practice; his words are, "We should be as much influenced (as respects the period of introducing the hand) by the os uteri being in a state *capable of dilatation* without violence, as by its being really open; when this is the case, therefore, if the woman's situation demand speedy assistance, we should not hesitate to attempt delivery." His Essay on this subject, was published in the year 1777, and is in every respect a valuable work, rendered more so by the number of interesting cases appended to it. It has been republished in this city, and is highly worthy of the perusal of every student and prac-

on the first attack of hemorrhage, would, in many cases, be attended with the greatest danger, and in almost every case is improper and unnecessary. I have never yet seen an instance, where delivery was required during the first paroxysm, if the proper treatment was followed. Whether it may be required in a second or third attack, or even later, must depend upon the quantity and rapidity of the discharge, its effects, and the strength of the woman. But whenever we find the os uteri softer, and in any degree more open than in its usual state before labour, admitting the finger to be introduced easily within it, we may deliver safely; and if the hemorrhage be continuing, ought not to delay. This state will generally be found accompanied with obscure pains; but we attend less to the degree of pain than of discharge, in determining on delivery. The pains gradually increase for a certain period, and then go off. During their continuance, the os uteri dilates more; but if the hemorrhage have been, or continues to be considerable, we must not wait until the os uteri be much dilated, as we thus reduce the woman to great danger, and diminish the chance of her recovery. A prudent practitioner will not, on the one hand, violently open up the os uteri at an early period, but will use the plug,* until the os uteri become soft and dilatable; and if the hemorrhage be not considerable, he will even, if the state of the patient allow him, wait until slight pains have appeared, or the os uteri begin sensibly to open without them; for he will recollect that the more violence that is done to the os uteri, the greater is the risk of bad symptoms supervening. It is an error into which some have fallen, who look upon debility from discharge as the only barrier to recovery. Violent delivery may produce inflammation, or a very troublesome fever. On the other hand, he will not allow his patient to lose much blood, or have many attacks; he will deliver her immediately, for

titioner of midwifery. Its title is, "An Essay on the Uterine Hemorrhage, which precedes the delivery of the full grown Fœtus: illustrated with cases by Edward Rigby, member of the Corporation of Surgeons in London."

* Gardien thinks, that in such cases, the plug will do harm by exciting the uterus to detach more of the placenta, and thus increase the hemorrhage, T. ii. p. 404.

he knows that whenever this is necessary, it is easy, the os uteri yielding to his cautious endeavours.

But very frequently we are not called until the patient have had one or two attacks; and been reduced to great danger. We find her with feeble pulse, ghastly countenance, frequent vomiting, and complaining occasionally of slight pains. On examination, the vagina is so filled with clotted blood, adhering firmly by the lymph to the uterus, that at first we find some difficulty in discovering the os uteri. We cannot here hesitate a moment what course to follow. If the patient is to be saved, it is by delivery. The os uteri will be in part dilated; it may easily be fully opened. We perhaps find an edge of the placenta projecting into the vagina, perhaps the centre of the placenta presenting or protruding like a cup into the vagina; but in those cases the rule is the same. We pass by the placenta to the membranes, rupture them,* and turn the child, delivering according to the directions which I have already given, and treating the patient in all other respects in the exhibition of opiates and cordials and nourishment, and exciting the subsequent contraction of the womb, as in the case formerly considered.

It may be supposed, that as the treatment is so nearly the same, it is not material that we distinguish whether the placenta or membranes present. But it is convenient to make a distinction, because in those cases where the placenta does not present, it is possible, in certain circumstances, to cure the flooding, and carry the patient to the full time; and in those cases, which are indeed the most numerous, where this cannot be done, we always look to uterine contraction as a very great assistance, and expect that where that is greatest, the danger will be least. But when the placenta presents, we have no hope of conducting the woman safely to the full time. We have no ground to look to contraction or labour pains as a mean of safety; for, on the contrary, every effort to dilate the os uteri separates still more the placenta, and increases the hemorrhage.† The very circumstance which in some other cases

* This is much safer for the child than pushing the hand through the placenta; and it is equally advantageous for the mother, and easy to the operator.

† The greatest number of profuse or alarming hemorrhages proceed from the presentation of the placenta, or the implantation of its margin over the os uteri:

would save the patient, will here, in general, increase the danger. I say in general, for there are doubtless examples where the patient has by labour been safely, and without assistance, delivered of the child, when part of the placenta has presented. Nay, there have been instances where the placenta has been expelled first, and the child after it.* These examples are to be met with in collections of cases by practical writers; and some solitary instances are likewise to be found in different journals. It would be much to be lamented if these should ever appear without having, at the same time, a most solemn warning sent along with them to the accoucheur, to pay no attention to them in his practice.† I am convinced that they may do inexpressible mischief, by affording argument for delay, and excusing the practitioner to himself for procrastination. There is scarcely any malady so very dreadful as not to afford some examples of a cure effected by the powers of nature alone; but ought we thence to tamper with the safety of those whose lives are committed to our charge? Ought we to neglect the early and vigorous use of an approved remedy, because the patient has not in every instance perished from the negligence of the attendant? It is highly proper to publish the case of a patient who, from hernia, has had an anus formed at his groin, because it adds to our stock of knowledge: But what should we think of a surgeon who should put such a case into the hands of a young man without, at the same time, saying, "Sir, if such a case ever happen in your practice, either you or your patient will be very much to blame." I do not mean from this to say that we are to blame, in every instance, the accoucheur who has attended a case where the placenta has presented, and the patient been delivered by nature: far from it, for by the use of the plug, he may have restrained the hemorrhage, pains may have come on, and the child, de-

and consequently, the greatest number of cases requiring delivery are of this kind.

* Even in those cases where the placenta is expelled first, the flooding may recur, and the woman die, if she be not assisted. Vide La Motte. Obs ccxxxviii. and ccxxxix.

† Most of those who have met with such cases, do not seem to count much upon them.

scending may have carried the plug before it: or when he was called to his patient, he may have found her alrealy in labour, and the process going on so well and so safely, that all interference would have been injudicious. But these instances are not to be converted into general rules, nor allowed to furnish any pretext for procrastination. They happen very seldom, and never ought to be related to a young man without an express intimation that he is not to neglect delivery, when it is required, upon any pretence whatsoever.

§ 38. FALSE PAINS.

Many women are subject, in the end of gestation, to pains about the back or bowels, somewhat resembling those of labour, but which, in reality, are not connected with it. These, therefore, are called false pains. They sometimes only precede labour a few hours; but in many cases, they come on several days, or even some weeks, before the end of pregnancy, and may be very frequently repeated, especially during the night, depriving the woman of sleep. They are often confined altogether to the belly, shifting their place, and being very irregular both in their attacks and continuance. In some cases they affect the side, particularly the right side, in the region of the liver, and are exceedingly severe, especially in the evening; they are accompanied with acidity or water-brash, or retching, and generally the child is at that time very restless. These pains may doubtless occur in any habit, but they most frequently harass those who are addicted to the use of cordials. On other occasions, the false pains occupy chiefly the back or hips, or upper part of the thighs. They even sometimes resemble still more nearly parturient pains, in being attended with an involuntary effort on the part of the abdominal muscles, to press down, so as to make the woman suppose that she is about to be delivered; and this is occasionally accompanied with tenesmus, or with protrusion of the bladder from the vagina, very like the membranes of the ovum. In other cases, they are attended with a discharge of watery fluid from the vagina. False pains may be occasioned by many causes: the most frequent are flatulence; a

spasmodic state of the bowels, resembling slight colic; or irritation, connected with costiveness or diarrhœa; or nephritic affections, often accompanied with strangury. A sudden motion of the back, or unusual degree of fatigue, may cause a remitting pain in the back and loins; or getting suddenly out of bed when warm, and placing the feet on the cold floor, may have the same effect. A slight degree of lumbago may also resemble the parturient pains. Agitation of mind, or a febrile state of the body, or some irritation in the neighbourhood of the uterus, or some unusual motion of the child, may produce an uneasy sensation in the uterus; and sometimes this is accompanied by a discharge of watery fluid from the vagina. Other uterine irritations may excite painful action in the uterus itself, or sympathetically in other parts, as the intestines or muscles of the abdomen. Amongst these irritations may be mentioned that which sometimes attends the full development of the cervix in the last weeks of gestation, or the expansion of the portion immediately adjoining the os uteri.

False pains may often be distinguished by their situation; as for instance, when they affect the bowels or kidneys; by their shifting their situation; by their duration; by their irregularities; and by the symptoms with which they are attended. But the best criterion is, that they are not attended with any alteration in the uterine fibres, which, during true or efficient labour pains, contract so as to render the uterus more compact, and make it feel harder when the hand is placed over it on the abdomen. They also seldom affect the os uteri, that part not being dilated during their continuance. It is necessary however, to observe, that a dilated state of the os uteri does not always prove that the pains are those of labour; for it may be found prematurely dilated, to a slight degree, before the proper term of labour, without any pain. In this case, if the pains proceed from affections of the bowels, no effect is produced during the pain, in rendering the os uteri tense, or making it larger. On the other hand, it sometimes happens, that the fibres about the os uteri are prematurely irritated; and this state may be accompanied with pain, and with a perceptible change on the os uturi during a pain. This is a very ambiguous case; but we may be assisted in our judgment, by discovering, that the term of utero-

gestation is not completed, that the os uteri is hard or thick, and the pains irregular, both in severity and duration, coming on at long intervals, or being frequently repeated for some hours, and then going altogether off for so many more, and thus perhaps continuing even for several days. This seems sometimes to depend on preternatural sympathy of the neighbouring parts with the os uteri, so that when it begins to dilate, the abdominal or perineal muscles, &c. are excited to painful action, which, on the principle of the sympathy of equilibrium, which I have elsewhere explained, immediately calls off the uterine action, which for a long time rather excites those other parts to unprofitable pain, than establishes itself into regular labour. In all such cases, it is best to proceed on the supposition, that the woman is not actually in labour. By letting her alone, she most likely will have a continuance of pain, terminating, it is true, in labour, but the process will be tedious and fatiguing; whereas, by suspending the action by an opiate, and if necessary by venesection, she may go on for some time longer, and shall at all events have an easier delivery.

When the false pains are accompanied with a febrile state, or are very distressing during the night, it will be proper to detract blood, and afterwards give an anodyne. In all other cases, it is generally sufficient to keep the woman in a state of rest; open the bowels by means of a clyster, if there be no diarrhœa, and afterwards give an opiate to be succeeded by a laxative. Rubbing with anodyne balsam is also useful, or gentle friction with the flesh brush. Motion also often relieves the muscular pain, whilst a quiescent state increases it, and hence it is in many cases worst during the night. In other instances, the erect posture or walking, probably from irritation of the cervix and os uteri, by pressure of the child's head, excites pain.

Shivering and tremor occur in some cases, in the end of pregnancy; and as they also occasionally precede labour, they often give rise to an unfounded expectation, that delivery is approaching. They appear to be connected sometimes with the state of the stomach, or alimentary canal; in other instances with some change in the os uteri itself, which even without pain, may be so far opened or relaxed as to allow the finger very easily to touch

the child's head through the membranes. It is usually in the evening, or through the night, that the shivering is felt; and it is occasionally pretty severe, and may be several times repeated. Nothing, however, is required, except a little warm gruel, or a moderate dose of laudanum, which is always effectual.

THE

PRINCIPLES

OF

MIDWIFERY.

BOOK II.

OF PARTURITION.

CHAP. I.

Of the Classification of Labours.

LABOUR may be defined to be the expulsive effort made by the uterus for the birth of the child, after it has acquired such a degree of maturity, as to give it a chance of living independently of its uterine appendages.

I propose to divide labours into seven classes; but I do not consider the classification to be of great importance, nor one mode of arrangement much better than another, for the purposes of practice, provided proper definitions be given, and plain rules delivered, applicable to the different cases.

The classes which I propose to explain are,

Class I. *Natural Labour;* which I define to be labour taking place at the end of the ninth month of pregnancy; the child presenting the central portion of the sagittal suture, and the forehead being directed at first toward the sacro-iliac symphysis; a due proportion existing betwixt the size of the head, and the capacity of the pelvis: the pains being regular and effective;

the process not continuing beyond twenty-four hours, seldom above twelve, and very often not for six. No morbid affection supervening, capable of preventing delivery, or endangering the life of the woman.

This comprehends only one order.*(a)*

(a) Our author might, perhaps with propriety, have divided this class into two orders, viz.

Order 1. The posterior fontanelle of the child presenting towards the left acetabulum, and the anterior fontanelle, or forehead, towards the right sacro-iliac symphysis. This is by far the most common presentation.

Order 2. The posterior fontanelle presenting towards the right acetabulum, and the anterior fontanelle, or forehead, towards the left sacro-iliac symphysis. This position or presentation, according to Baudelocque, occurs but in the proportion of 1 to 7 or 8 of the first.

In an accurate register kept by Baudelocque, it appears, that of 12,183 presentations of the head, 10,003 were of the first position, or with the posterior fontanelle towards the left acetabulum, and 2,113 in the second position, or with the posterior fontanelle towards the right acetabulum.

Classification and systematic arrangement generally, are most frequently purely artificial and arbitrary; and that of our author, as laid down above, is not such as we can cordially approve, but as his division of the subject in the following sections is founded upon it, we have not deemed it proper to propose any essential alteration. The great and deserved celebrity of Baudelocque as a practical writer, seems, notwithstanding, to demand that we should here briefly state his division of the presentations of the vertex, which he considers as natural.

There are then, according to him, six positions in which the vertex presents at the superior strait, viz.

1. The posterior *fontanelle* is situated behind the left *acetabulum*, and the anterior before the right sacro-iliac symphysis.

2. The posterior *fontanelle* is situated behind the right *acetabulum*, and the anterior before the left *sacro-iliac symphysis*.

3. The posterior *fontanelle* answers to the *symphysis* of the *pubis*, the anterior to the sacrum.

4. The anterior *fontanelle* answers to the left *acetabulum*, and the posterior to the right *sacro-iliac symphysis*.

5. The anterior *fontanelle* is situated behind the right *acetabulum*, and the posterior before the left *sacro-iliac symphysis*.

6. The anterior *fontanelle* is behind the *symphysis* of the pubis, and the posterior before the sacrum.

The more frequent occurrence of the 1st. and 2d. than of the 4th. and 5th. is calculated to be in the proportion of 80 or 100 to 1. The 3d. and 6th. presentations are extremely rare, and indeed may be almost considered as preternatural, or pre-supposing some deformity of the pelvis or fœtal head.

Class II. *Premature Labour*, or labour taking place considerably before the completion of the usual period of utero-gestation, but yet not so early as necessarily to prevent the child from surviving.

This comprehends only one order.

Class III. *Preternatural Labours*, or those in which the presentation, or position of the child is different from that which occurs in natural labour; or in which the uterus contains a plurality of children, or monsters.

This comprehends seven orders.

Order 1. Presentation of the breech.

Order 2. Presentation of the inferior extremities.

Order 3. Presentation of the superior extremities.

Order 4. Presentation of the back, belly, or sides of the child.

Order 5. Malposition of the head.

Order 6. Presentation of the funis.

Order 7. Plurality of children, or monsters.

Class IV. *Tedious Labour*, or labour protracted beyond the usual duration; the delay not caused by the malposition of the child, and the process capable of being finished safely, without the use of extracting instruments.

This comprehends two orders.

Order 1. Where the delay proceeds from some imperfection or irregularity of muscular action.

Order 2. Where it is dependent principally on some mechanical impediment.

Class V. *Laborious or Instrumental Labour;* labour which cannot be completed without the use of extracting instruments; or altering the proportion betwixt the size of the child, and the capacity of the pelvis.

This comprehends two orders.

Order 1. This case admitting the use of such instruments as do not necessarily destroy the child.

It will be observed, that in the arrangement of our author, the first and second positions of the vextex only are admitted into the class of natural labour, whilst the third, fourth, fifth and sixth positions of Baudelocque, are thrown into the class of preternatural labours under order 5. Malposition of the head.

Order 2. The obstacle to delivery being so great, as to require that the life of the child should be sacrificed for the safety of the mother.

Class VI. *Impracticable Labour;* labour in which the child, even when reduced in size, cannot pass through the pelvis.

This comprehends only one order.

Class VII. *Complicated Labour;* labour attended with some dangerous or troublesome accident or disease, connected in particular instances with the process of parturition.

This comprehends six orders.

Order 1. Labour complicated with uterine hemorrhage.

Order 2. Labour complicated with hemorrhage from other organs.

Order 3. Labour complicated with syncope.

Order 4. Labour complicated with convulsions.

Order 5. Labour complicated with rupture of the uterus.

Order 6. Labour complicated with suppression of urine, or rupture of the bladder.

Calculations have been made, of the proportion which these different kinds of labour bear to each other in practice. Thus Dr. Smellie supposes, that out of a thousand women in labour, eight shall be found to require instruments, or to have the child turned, in order to avoid them; two children shall present the superior extremities; five the breech; two or three the face; one or two the ear; and ten shall present with the forehead turned to the acetabulum.

Dr. Bland has, from an hospital register, stated the proportion of the different kinds of labour, to be as follows: of 1897 women, 1792 had natural labour. Sixty-three, or one out of 30, had unnatural labour; in 18 of these, the child presented the feet; in 36, the breech; in 8, the arm; and in 1, the funis. Seventeen, or one out of 111, had laborious labour; in 8 of these, the head of the child required to be lessened; in 4, the forceps were employed; and in the other 5, the face was directed towards the pubis. Nine, or one in 210, had uterine hemorrhage before or during labour. It is evident, however, that this register cannot form a ground for general calculation; and the reader will perceive, that the number

of crotchet cases exceeds those requiring the forceps, which is not observed in the usual course of practice.* Dr. Merriman says, the breech presents once in 86, the feet once in 80, and the arm once in 170, cases. Dr. Nägele, in the hospital of Heidelberg, out of 263 cases there were four twins; 256 children presented the head; and two of those the face; 5 the breech; 3 the feet; 1 the arm; 1 the breast; 1 the hip. Hence, 1 in 26 cases was preternatural.*(b)*

* Farther information may be obtained, by consulting the Report of the Dublin Lying-in Hospital, by Dr. Clarke; and that of the Westminster Hospital, by Dr. Granville.

(b) From the register kept at l'Hospice de la Maternité, a lying-in hospital at Paris, under the direction of Baudelocque, it appears, that of 12,751 labours, 12,573 at least were *natural:* the assistance of art being necessary in 178 cases only, which is in the proportion of 1 to $71\frac{2}{3}$, of these,

	Cases.
The face presented in	18
The shoulders	38
The head and umbilical cord	15
The thighs	22
The feet	11
Other parts not specified	24
Convulsions and floodings	4
As 1 to $96\frac{1}{3}$	132

The forceps were applied in 37 cases, which is as 1 to $344\frac{2}{3}$.

The cranium was perforated, or the crotchet applied, in 9 cases only.

Gastrotomy was performed in one case only, and that to extract an extra-uterine fœtus.

It also appears from a late periodical publication, that there were admitted into the lying-in hospital at Paris, called Maison d'Accouchemens, between the 9th of December, 1799, and the 31st of May, 1809, 17,308 women, who gave birth to 17,499 children; of which number 16,286 were presentations of the vertex to the os uteri.

No.		Proportions.	
215	were presentations of the feet	1 to	$81\frac{2}{3}$
296	the breech	1—	$59\frac{1}{9}$
59	the face	1—	$296\frac{1}{2}$
52	one of the shoulders	1—	$336\frac{1}{2}$
4	the side of the thorax	1—	$4374\frac{3}{4}$

We cannot form an estimate of the proportion of labours, with much accuracy, from the practice of individuals, as one man may, from particular circumstances, meet with a greater number of difficult cases, than is duly proportioned to the number of his patients. Thus Dr. Hagen of Berlin says, that out of 350 patients, he employed the forceps 93 times, and the crotchet in 28 cases; 26 of his patients died. Dr. Dewees, again, of Philadelphia, says, that in more than 3000 cases, he has not met with one requiring the use of the crotchet.

4	the hip	1—	4374¾
4	the left side of the head	1—	4374¾
4	the knees	1—	4374¾
4	the head, an arm, and the cord	1—	4374¾
3	the belly	1—	5833
3	the back	1—	5833
3	the loins	1—	5833
1	the occipital region	1—	17499
1	the side, with the right hand	1—	17499
1	the right hand and left foot	1—	17499
1	the head, and the feet	1—	17499
2	the head, the hand, and forearm	1—	8749½
37	the head, and umbilical cord	1—	473

Of this great number of women, 230 were delivered by art, the rest were natural births, being in the proportion of 1 to 76½; 161 were delivered by the hand alone, the children being brought by the feet; 49 were delivered by the forceps, either on account of the small dimensions of the pelvis, the falling down of the umbilical cord, or the wrong position of the head, when the woman was exhausted, or her life was in danger by convulsions, &c.; 13 were extracted by the crotchet after perforation of the head, on account of mal-conformation of the pelvis; in these instances the death of the child was first ascertained.

The cæsarean operation was performed in two cases, the diameter of the pelvis being only one inch six lines from sacrum to pubis.

In one, the section of the symphysis pubis was performed, the diameter of the pelvis from sacrum to pubis being only two inches and a quarter.

Gastrotomy was performed once, the fœtus being extra-uterine; the child weighed 8lb. 2oz.

CHAP. II.

Of Natural Labour.

§ 1. STAGES OF LABOUR.

Previous to the accession of labour, we observe certain precursory signs, which appear sometimes for several days, oftener only for a few hours before pains be felt. The uterine fibres begin slowly and gradually to contract or shorten themselves, by which the uterus becomes tenser and smaller. It subsides in the belly: the woman feels as if she carried the child lower than formerly, and thinks herself slacker and less than she was before. For some days before gestation be completed, she in many cases is indolent and inactive, but now she often feels lighter and more alert. At the same time that the uterus subsides, the vagina and os uteri are found to secrete a quantity of glairy mucus, rendering the organs of generation moister than usual: and these are somewhat tumid and relaxed, the vagina especially becoming softer and more yielding. These changes are often attended with a slight irritation of the neighbouring parts, producing an inclination to go to stool, or to make water frequently, and very often griping precedes labour, or attends its commencement.

The intention of labour is, to expel the child and secundines. For this purpose, the first thing to be done, is to dilate, to a sufficient degree, the os uteri, so that the child may pass through it. The next point to be gained, is the expulsion of the child itself: and last of all, the fœtal appendages are to be thrown off. The process may therefore be divided into three stages. The first stage is generally the most tedious. It is attended with frequent, but usually short pains, which are described as being sharp, and sometimes so severe, as to be called cutting or grinding. They commonly begin in the back, and extend toward the pubis or top of the thighs; but there is, in this respect, a great diversity with different women, or the same woman at different times. Sometimes the pain is felt

chiefly or entirely in the abdomen, the back being not at all affected during this stage; and it is generally observed, that such pains are not so effective as those which affect the back. Or the pain produced by the contraction of the womb, may be felt in the uterine region; and when it goes off, may be succeeded by a distressing aching in the back. In other cases, the pain is confined to the small of the back, and upper part of the sacrum; and is either of a dull aching kind, or sharp and acute, and in some instances, is attended with a considerable degree of sickness, or tendency to syncope. The most regular manner of attack, is for pains to be at first confined to the back, descending lower by degrees, and extending round to the belly, pubis, or top and fore part of the thighs, and gradually stretching down the back part of the thighs, the fore part becoming easy: occasionally one thigh alone is affected. At this time also, one of the legs is sometimes affected with cramp. The duration of each pain is variable; at first it is very short, not lasting above half a minute, perhaps not so long, but by degrees it remains longer, and becomes more severe. The aggravation, however, is not uniform, for sometimes in the middle of the stage, the pains are shorter and more trifling than in the former part of it. During the intermission of the pains, the woman sometimes is very drowsy, but at other times is particularly irritable and watchful. The pains are early attended with a desire to grasp or hold by the nearest object, and at the same time, the cheeks become flushed, and the colour increases with the severity of the pain.

The pains of labour often begin with a considerable degree of chilness; or an unusual shaking or trembling of the body, with or without a sensation of coldness. These tremors may take place, however, at any period of labour; they may usher in the second stage, and be altogether wanting during the first; or they may not appear at all, even in the slightest degree; or they may be present only for a very short time. They do not generally precede the uterine pain, but may be almost synchronous in their attack: in other cases they do not appear until the pain has lasted for a short space of time; but whenever they do come on, it is usual for the uterine pain to be speedily removed. Hence it might be suppos-

ed that they should materially retard labour, but this is far from being always the case. In degree, they vary from a gentle tremor to a concussion of the frame, so violent as to shake the bed on which the patient rests, and even to bear some resemblance to a convulsion. The stomach also sympathizes with the uterus during this stage, the patient complaining of a sense of oppression; sometimes of heartburn or sickness, or even of vomiting, which is considered as a good symptom, when it does not proceed from exhaustion; or of a feeling of sinking or faintness, but the pulse is generally good. When there is in a natural labour, a sudden attack of sickness, faintishness, and feeble pulse, the patient is generally soon relieved by vomiting bile. These symptoms, however, are often wanting, or attack at different periods of labour: like the rigours, they may be absent during the greatest part of the first stage, or until its end, ushering in the second; but in general, they are confined to the first stage, going off when the os uteri is fully dilated. In consequence, partly of those feelings, partly of the anxiety and solitude connected with a state of suffering and danger, and partly from the pains being free from any sensation of bearing-down, the woman, during this stage, is apt to become desponding, and sometimes fretful. She supposes that the pains are doing no good: that she has been, or is to be, long in labour; that something might be done to assist her, or has been done, which had better have been avoided; and that there is a wrong position of the child, or deficiency of her own powers.

When the pains of labour begin, there is an increased discharge of mucus from the vagina, which proceeds from the vaginal lacunæ, and from the os uteri. It is glairy, whitish, and possesses a peculiar odour. When the os uteri is considerably dilated, though sometimes at an earlier period, there is, in consequence of the separation of the decidua, a small portion of blood discharged, which gives a red tinge to the mucus.

The distention of the os uteri is often attended with irritation of the neighbouring parts, the woman complaining of a degree of strangury; or having one or two stools with or without griping, especially in the earlier part of the stage. The pulse generally is somewhat accelerated.

The os uteri being considerably dilated, the second stage begins. The pains become different, they are felt lower down, they are more protracted, and attended with a sense of bearing-down, or an involuntary desire to expel or strain with the muscles; and this desire is very often accompanied with a strong inclination to go to stool. A perspiration breaks out, and the pulse, which, during the first stage, beat rather more frequently than usual, becomes still quicker; the woman complains of being hot, and generally the mouth is parched. Soon after the commencement of this stage, it is usual for the liquor amnii to be discharged. This is often followed by a short respite from pain, but presently the efforts are redoubled. Sometimes there is no cessation, but the pains immediately become more severe, and sensibly effective. The perinæum now begins to be pressed outward, and the labia are put upon the stretch. The protrusion of the perinæum gradually increases, but it is not constant: for when the pain goes off, the head generally recedes a little, and the perinæum is relaxed. Presently the head descends so low, that the parts are kept permanently on the stretch, and the anus is carried forward. Then the vertex pressing forward, the labia are enlongated, and the orifice of the vagina dilated. The perinæum is very thin, much stretched, and spread over the head of the child. As the head passes out, the perinæum goes back over the forehead, becoming narrower, but still more distended laterally. If the perinæum did not move backward, as the head moved forward, it would run a greater risk of being torn; and indeed even in the most regularly conducted labour, a part of it is often rent. Delivery of the head is accomplished with very severe suffering; but immediately afterwards, the woman feels easy, and free from pain. In a very little time, however, the uterus again acts, and the rest of the child is expelled, which completes the second stage of labour. The expulsion of the body is generally accomplished very easily, and quickly; but sometimes the woman suffers several strong and forcing pains, before the shoulders are expelled. The birth of the child is succeeded, after a short calm, by a very slight degree of pain, which is consequent to that contraction which is necessary for the expulsion of the placenta. This expulsion is accompanied and preceded by a slight

discharge of blood, which is continued, but in decreasing quantity, for a few days, under the name of the red lochia.

§ 2. DURATION OF THE PROCESS.

The duration of this process, and of its stages, varies not only in different women, but in the same individual in successive labours; for although some, without any mechanical cause, be uniformly slow or expeditious, others are tedious in one labour, and perhaps extremely quick in the next, and this variation cannot be foreseen from any previous state of the system. A natural labour ought to be finished within 24 hours after the first attack of pain, provided the pains be truly uterine, and are continued regularly; for occasionally, after being repeated two or three times, they become suspended, and the person keeps well for many hours, after which the process begins properly. In such cases, the labour cannot be dated from the first sensation of pain, nor deemed tedious. The greatest number of women do not complain for more than 12 hours; many for a much shorter period; and some for not more than one hour. Few women call the accoucheur, until, from the regularity and frequency of the pains, they are sure that they are in labour, and feel themselves becoming worse. As the celerity of the process cannot be previously determined, many women thus bear their children alone, becoming rapidly and unexpectedly worse. On an average, it will be found, that in natural labour, the accoucheur is not called above four hours previous to delivery.

The regularity and comparative length of the different stages is also various; but it will be generally observed, that when the woman has a natural labour protracted to its utmost extent, the delay takes place in the first stage; and in those cases where the second stage is protracted, the delay occurs in the latter end of that stage. In most cases, the first stage is triple the length of the second. The first stage may be tedious, from the pains not acting freely on the os uteri, or being weak and inadequate to the effect intended, or becoming prematurely blended with the second stage; that is to say, bearing-down efforts being made, before the os uteri be much

dilated. Various circumstances may conspire to produce this delay, such as debility of the uterus, rigidity of its mouth, premature evacuation of the water, improper irritation, injudicious voluntary efforts, &c. The second stage may be tedious, from irregularity of the uterine contraction, or from a suspension of the bearing-down efforts, or from the head not turning into the most favourable direction, or from the rigidity of the external organs.

These, and other causes, which will hereafter be considered, may not only protract the labour, but may even render it so tedious, as to remove it from the class of natural labours altogether. It is a general opinion, that a first labour is always more lingering than those which succeed. We should be led, however, to suppose, that parturition, being a natural function, ought to be as well and as easily performed the first time, as the fifth; the process not depending upon either habit or instruction. But we do find, that here, as in many other cases, popular opinion is founded on fact; for although, in several instances, a first labour is as quick as a second, yet, in general, it is longer in both its stages. This, perhaps, depends chiefly on the facility with which the different soft parts dilate, after they have been once fully distended. Some have attributed the pain of parturition to mechanical causes, ascribing it to the shape of the pelvis, and the size of the child's head. But this is not the case, for in a great majority of cases, the pelvis is so proportioned, as to permit the head to pass with great facility. The pain and difficulty attending the expulsion of the child in natural labour, are to be attributed to the forcible contraction of the sensible fibres of the uterus, and to the dilatation of the os uteri and vulva, in consequence thereof. Women will therefore, *ceteris paribus*, suffer in proportion to the sensibility of the organs concerned, and the difficulty with which the parts dilate. In proportion as we remove women from a state of simplicity to luxury and refinement, we find that the powers of the system become impaired, and the process of parturition is rendered more painful. In a state of natural simplicity, women, in all climates, bear their children easily, and recover speedily;* but this is more especially the case in those

* "The Greenlanders, mostly, do all their common business just before and

countries where heat conspires to relax the fibres. The quality or quantity of the food has much less influence than the general habit of life, upon the process of parturition. In a savage state, women, though living abstemiously, and often compelled to work more than men, bear children with facility; whilst in this country, women who live on plain diet are not easier than those who indulge in rich viands.

§ 3. OF EXAMINATION.

The existence and progress of labour, and the manner in which

"after their delivery; and a still-born or deformed child is seldom heard of." Crantz's History of Greenland, Vol. I. p. 161.

Long tells us, that the American Indians, as soon as they bear a child, go into the water and immerse it. One evening he asked an Indian where his wife was; "he supposed she had gone into the woods, to set a collar for a partridge." In about an hour she returned with a new-born infant in her arms, and coming up to me, said, in Chippoway, "Oway saggonash payshik shomagonish;" or, "Here, "Englishman, is a young warrior." Travels, p. 59.

"Comme les accouchemens sont tres-aisés en Perse, de meme que dans les "autres pais chauds de l'Orient, il n'y a point de sages femmes. Les parentes "agées et les plus graves, font cet office, mais comme il n'y a gueres de vieilles "matrones dans le harm, on en fait venir dehors dans le besoin." Voyages de M. Chardin, Tom. VI. p. 230.

Lempriere says, "Women in this country (Morocco,) suffer but little incon-"venience from child-bearing. They are frequently up next day, and go through "all the duties of the house with the infant on their back." Tour, p. 328.

Winterbottom says, that, "with the Africans, the labour is very easy, and trust-"ed solely to nature, nobody knowing of it till the woman appears at the door of "the hut with the child." Account of Native Africans, &c. Vol. II. p. 209.

The Shangalla women "bring forth children with the utmost ease, and never "rest or confine themselves after delivery; but washing themselves and the child "with cold water, they wrap it up in a soft cloth, made of the bark of trees, and "hang it up on a branch, that the large ants with which they are infested, and "the serpents may not devour it." Bruce's Travels, Vol II. p. 553.

In Otaheite, New South Wales, Surinam, &c. parturition is very easy, and many more instances might, if necessary, be adduced. We are not, however, to suppose that in warm climates women do not sometimes suffer materially. In the East Indies, "many of the women lose their lives the first time they bring "forth." Bartolomeo's Voyage, chap. 11.

Undomesticated animals generally bring forth their young with considerable ease; but sometimes they suffer much pain, and, when domesticated, occasionally lose their lives.

the child is placed, are ascertained by examination per vaginam. For this purpose the woman ought to be placed in bed, on her left side,* with a counterpane thrown over her, if she be not undressed. The hand is to be passed along the back part of the thighs to the perinæum, and thence immediately to the vagina, into which the fore finger is to be introduced. It never ought to be carried to the fore part of the vulva, and from that back to the vagina. The introduction is to be accomplished as speedily and gently as possible, and the greatest delicacy must be observed. The information which we wish to procure is then to be obtained by a very perfect, but very cautious examination of the os uteri and presenting part of the child, which gives no pain, and consequently removes the dread which many women, either from some misconception, or from previous harsh treatment, entertain of this operation. The application of the hand to the abdomen, during the continuance of the pain, may ascertain, from the temporary hardness of the uterus, that its fibres are contracting universally.†

When a woman is in labour, we should, if the pains be regular, propose an examination very soon after our arrival.

It is of importance that the situation of the child be early ascertained, and most women are anxious to know what progress they have made, and if their condition be safe. As it is usual to examine during a pain, many have called this operation "taking a pain;" but there is no necessity for giving directions respecting the proper language to be used, as every man of sense and delicacy will know how to behave, and can easily, through the medium of the nurse, or by turning the conversation to the state of the patient, propose ascertaining the progress of the labour. Some women, from motives of false delicacy, and from not understanding the importance of procuring early information of their condition,

* A standing or half-sitting position has been proposed by some, and may doubtless, in certain diseases of the uterus, be proper, that it may, by its weight, come within reach. Sometimes in the early months of pregnancy, it is allowable from the same motives; but, during labour, it is not often that the uterus is so high that the examination cannot be performed in a recumbent posture.

† This mark has been properly insisted on by Mr. Power, in his ingenious Treatise on Midwifery, p. 25.

are averse from examination, until the pains become severe. But this delay is very improper; for, should the presentation require any alteration, this is easier effected before the membranes burst, than afterwards. When the presentation is ascertained to be natural, there is no occasion for repeated examinations in the first stage, as this may prove a source of irritation, and, should the stage be tedious, may be a mean of exciting impatience. In the second stage, the frequency of examination must be proportioned to the rapidity of the process.

In order to avoid pain and irritation, it is customary to anoint the finger with oil or pomatum; but unless this practice be used as a precaution to prevent the action of morbid matter on the skin, it is not very requisite, the parts being, in labour, generally supplied with a copious secretion of mucus. It is usual for the room to be darkened, and the bed curtains drawn close, during an examination; and the hand should be wiped with a towel, under the bed-clothes, before it be withdrawn. The proper time for examining is during a pain; and we should begin whenever the pain comes on. We thus ascertain the effect produced on the os uteri, and by retaining the finger until the pain goes off, we determine the degree to which the os uteri collapses, and the precise situation of the presenting part, which we cannot do during a pain, if the membranes be still entire, lest the pressure of the finger should, were they thin, prematurely rupture them.

An examination should never, if possible, be proposed or made whilst an unmarried lady is in the room, but it is always proper that the nurse or some other matron be present.

The existence of labour is ascertained by the effects of the pains on the os uteri; and its progress, by the degree to which it is dilated, and the position of the head with regard to different parts of the pelvis.

Before labour begins, the os uteri is generally closed, and directed backwards towards the sacrum. When we examine in the commencement of labour, the os uteri is to be sought for near the sacrum, at the back part of the pelvis, whilst between that spot and the pubis, we can pass the finger along the fore part of the cervix uteri. On this, the presenting part of the child rests, so that, in

natural labour, it assumes somewhat the shape of the head; and, for the sake of distinction, I shall call it the uterine tumour. In some, it is so firmly applied to the head, and so tense, that a superficial observer would take it for the head itself. In this case the labour often is lingering. This tumour, or portion of the uterus, is broad in the beginning of labour, but becomes narrower as the os uteri dilates, until at last it is completely effaced, the head, either naked or covered with the membranes, occupying the vagina. The breadth of this portion of the uterus, therefore, as well as the examination of the os uteri, will serve to ascertain the state of the labour.

The os uteri gradually dilates by the pains of labour, but this dilatation is easier effected in some cases than in others. In some, though the pains have lasted for many hours, and have been frequent, the os uteri will be found still very little opened. In others, a very great effect is produced in a short time; nay, we even find, that the os uteri may be partly dilated without any pain at all. We cannot exactly foretell the effect which the pains may have by any general rule.

We find, in different women, the os uteri in very opposite states. In some it is thick, soft, and protuberant; in others, thin and tubulated; sometimes it is not prominent, but the edges of the mouth are on the same plane, like the mouth of a purse: these edges may be thin or thick, and both these states may exist with hardness or softness of the fibre. In some cases, they seem to be swelled, as if they were œdematous, and this state is often combined with œdema of the vulva, or it may proceed from ecchymosis. Now, of these conditions, some are more favourable than others; a rigid os uteri, with the lips either flat or prominent, is generally a mark of slow labour; for as long as this state continues, dilatation is tardy; a thick œdematous feel of the os uteri is also unfavourable; and usually a projecting or tubulated mouth, especially if the margin be thick and hard,* is connected with a more tedious labour than where the os uteri is flat. In some cases

* If the margin be thin and soft, the os uteri sometimes, in the course of an hour, loses its projecting form, and becomes considerably dilated.

of slow labour, the os uteri, for many hours, is scarcely discernible, resembling a dimple or small hard ring, perfectly level with the rest of the uterus. But although these observations may assist the prognosis, yet we never can form an opinion perfectly correct; for a state of the os uteri, apparently unfavourable, may be speedily exchanged for one very much the reverse, and the labour may be accomplished with unexpected celerity. Our prognosis, therefore, should be very guarded. When the pains produce little apparent effect on the os uteri; when they are slight and few; and when the orifice of the uterus is hard and rigid, or thick and puckered during a pain; there is much ground to expect that the labour may be lingering. On the other hand, when the pains are brisk, the os uteri thin and soft, we may expect a more speedy delivery; but as in the first case, the unfavourable state of the os uteri may be unexpectedly removed, so in the second, the pains may become suspended or irregular, and disappoint our hopes. The os uteri seldom dilates equally in given times, but is more slow at first in opening than afterwards. It has been supposed, that if it require three hours to dilate the os uteri one inch, it will require two to dilate it another inch, and other three to dilate it completely. This calculation, however, is subject to great variation, for in many cases, though it require four hours to dilate the os uteri one inch, a single hour more may be sufficient to finish the whole process.

The os uteri is, in the beginning of labour, generally pretty high up; but as the process advances, the uterus descends in the pelvis, along with the head; and, in proportion as it descends, the os uteri dilates, whilst the uterine tumour diminishes in breadth. Should the os uteri remain long high, even although it be considerably dilated, but more especially if it be not, there is reason to suppose that the labour shall be continued still for some time. On the other hand, should the uterus descend too rapidly, there may be a species of prolapsus induced, the os uteri appearing at the orifice of the vagina. This state is generally attended with premature bearing-down pains, and indicates a painful, and rather tedious labour.

The protrusion of the membranes, and discharge of the liquor

amnii, ought to bear a certain relation to the advancement of labour. Whilst the os uteri is beginning to dilate, the membranes have little tension; they scarcely protrude through the os uteri, until it be considerably opened. But in proportion as the dilatation advances, and the pains become of the pressing kind, the membranes are rendered more tense, protruding during a pain, and becoming slack, and receding when it goes off. In some cases, by examination, we find the membranes forced out very low into the vagina, like a portion of a bladder, tense and firm during a pain, but disappearing in its absence. Sometimes, although the head be so high as not to touch the perineum, the membranes protrude the perineum, and the fæces are evacuated or pressed out, as if the head were about to be expelled. When the membranes burst, the head is in such cases often delivered in a few seconds; but the pains may remit for a short time, and the woman be easier than formerly. The protrusion of the membranes, which has been described by some as constituting a part of a natural labour, is by no means a universal occurrence; for in numerous instances the membranes protrude very little, and scarcely form a perceptible bag in the vagina. When the pains have acted some time on the membranes, pushing the liquor amnii against them, and especially when they become pressing, the membranes burst and the water escapes, sometimes in a considerable quantity; but in other cases, very little comes away, the head occupying the pelvis so completely, that most of the water is retained above it, and is not discharged until the child be born. If there be great irregularity in the degree to which the membranes protrude, there is no less in the period at which they break. In some cases, from natural feebleness or thinness, they break very early, and the liquor amnii comes away slowly. Sometimes they break in the middle or latter end of the first stage, in the commencement of the second, or not until the very end, when the head is about to be born. The opening is sometimes very large, and the head enlarging it, passes through it; at other times it is small, and the membranes are not perforated by the head, but they come along with it like a cap or cover. By examination, we ascertain the state of the membranes, and may be assisted in our judgment of the progress of the labour. When the membranes feel

tense, and are protruded during a pain, we may be sure that the action of the uterus is brisk and good. When much water is collected beneath the head, forming a pretty large bag in the vagina; or when, during the pain, there is a tense protrusion of the membranes, though they be flat, forming a small segment of a large circle, we may expect, that if the pains continue as they promise to do, the membranes will soon burst, and the pains become more pressing. If during each pain, after the rupture, a quantity of water come away, it is probable, that whenever the uterus is pretty well emptied of the fluid, it will contract more powerfully. Should the membranes break when the os uteri is not fully opened, perhaps only half dilated, we may, if there be a large discharge, expect a brisker action, and that the full dilatation of the os uteri will be soon accomplished; but if the water only ooze away, and the pains become less frequent, and not more severe, the labour may probably be protracted for some time.

In the first stage of labour, the head will be found placed obliquely along the upper part of the pelvis, with the vertex directed toward one of the acetabula. The finger can easily ascertain the sagittal, and afterwards the lambdoidal suture; the central portion of the sagittal suture is the point from which we set out, and, if the finger be readily led to the angle formed by the posterior edges of the parietal bones, we may be sure that the presentation is favourable. If, on the other hand, we can feel the anterior fontanelle, the vertex is generally directed to the sacro-iliac articulation. When the pelvis is well formed, and the cranium of due size, the head may commonly be felt in every stage of labour; but there are cases, in which, even although the pelvis be ample, it is not easily touched for some time. Such instances, however, are rare; and whenever we are long of feeling the presentation, and do not discover a round uterine tumour, we may suspect that some other part of the child than the head presents. Even in the end of pregnancy, and long before labour begins, the head can usually be discovered resting on the distended cervix uteri; but different circumstances may for a time prevent it from being felt; the head perhaps in some cases, as from a fall for instance, being for a short time displaced towards one side.

In proportion as the head descends in the pelvis, the vertex is turned forward; so that, when the whole head has entered the pelvis, the face is thrown into the hollow of the sacrum, and the sagittal suture rests on the perineum, whilst the occiput is placed under the symphysis pubis, or on its inside. This takes place earlier in one case than in another.

When the head comes to present at the orifice of the vagina, or passes a line drawn from the under edge of the symphysis pubis back to the sacrum, the perineum and skin near the tuberosities of the ischia become full, as if swelled, but not tense. This at first proceeds from relaxation of the muscles, and some degree of descent of the vagina and rectum. Whenever this is felt, we may be sure that the head is descending; but although a few pains may distend the perineum, it may yet be some hours before this take place, the pains for all that time appearing to produce very little effect, although the pelvis be well formed. Should the perineum become stretched, and the anus be carried forward a little during the pain, we may expect that delivery is at hand. If the woman have already borne children, the child is sometimes delivered within a few minutes after the perineum is first felt to become full.

When the pelvis is well formed, the head generally descends without much change of the scalp; but when it is contracted, or the head rests long on the perineum, the scalp is either wrinkled, or protruded like a tumour filled with blood.

By examination, we ascertain the presentation, and the progress which the labour has made; but in forming an opinion respecting the probable duration of the process, we must be greatly influenced by the state of the pains, and in part also by our knowledge of former labours, if the woman have borne many children. The different stages of labour are generally marked by a different mode of expressing pain. In the first stage, the pains are sharp, and the woman either moans or frets, or sometimes bears in silence. The second stage is marked by a sound, indicating a straining exertion, a kind of protracted groan, so that, by the change of the cry, a practitioner may often determine the stage of the labour. Sometimes in this stage, the woman clinches her teeth, or holds in her breath, so that she is scarcely heard to complain. In the

moment of expelling the head, some women are quite silent, or utter a low groan, others scream aloud. When the pains in the first stage are increasing in frequency, in severity, and in duration, and when they are accompanied with a corresponding dilatation of the os uteri, and especially when it, together with the head, gradually descends, the prognosis is very favourable. When the pains, after the os uteri is considerably dilated, become forcing, with an inclination to void the urine or fæces, and when these pains are accompanied with a full dilatation of the os uteri, the head at the same time descending lower, and the cervix beginning to turn round, we may look for a speedy delivery. But if the pains in the first stage be weak and few, and occur at long intervals, or, though not unfrequent, if they last only for a few seconds, and especially, if at the same time the os uteri be high up, or hard, or thick, we may conclude that the process is not likely to be rapid. If, when the os uteri is little dilated, there be an inclination to bear down, the labour is generally slow, and hence all attempts to press with the abdominal muscles are improper; for whether these be made voluntarily or involuntarily, they, during this stage, add to the suffering, fatigue the woman, produce a tendency to prolapsus uteri, so that, in some instances, the os uteri is forced to the orifice of the vagina, and render the labour always slow and severe.

When the head is brought so low as to protrude the perineum, the pains generally become more frequent and severe, and very soon effect the expulsion. But if they be forcing, and propel the head considerably each time, but it recedes completely thereafter, it is likely that the delivery of the head will be difficult and painful; for in some cases the external parts are long of yielding, and require repeated efforts to distend them before the head can safely be expelled.

Sometimes the pains, after beginning regularly and briskly, become suspended, or less effective, and this alteration cannot be foreseen. It is a popular opinion, that if a woman be not delivered within twelve hours after she is taken ill, the labour will become brisker at the same hour at which it began, that is to say, twelve hours after its commencement; and this opinion is, in many instances, countenanced by fact. In other cases, the labour becomes

decidedly brisker six hours after its commencement. Most women begin to complain during the night, or early in the morning, and a great majority are delivered betwixt twelve at night and twelve o'clock noon.

§ 4. CAUSES OF LABOUR.

Different attempts have been made to explain why labour commenced at the end of the ninth month of pregnancy. The mysterious power of numbers, the influence of the planets, the distention of the uterine fibres, the pressure of the child upon the developed cervix and os uteri, have all in succession been enumerated, as affording a solution of the question. It can serve no good purpose to enter into the investigation, for the purpose of refuting these opinions, which might be easily done, especially as I have no satisfactory explanation to offer. We know, that whenever the process of utero-gestation is completed, the womb begins to contract. If, by any means, this process could be protracted, then labour would be kept off; and, on the other hand, if this process be stopped prematurely, either from some peculiarity connected with it, by which it is completed earlier than usual, or, from being interrupted by extraneous causes, acting either on the uterus, or by killing the child, then contraction does very soon commence. The immediate cause of the delivery of the child has been attributed to efforts made by the fœtus itself, the expulsive force of the abdominal muscles, or the contraction of the uterus. The first is fully set aside, by our finding, that the fœtus, when dead, is born *ceteris paribus*, as easily as when it is alive and active. That the muscles alone cause the expulsion of the child, is disproved, by observing, that in the early part of labour they are perfectly quiescent, and no voluntary effort made with them is attended with any good effect. That the delivery is in a great measure owing to the action of the uterus, is proved by observing, that the uterus contracts in proportion as the delivery advances, and when the child is born, it is found to be very greatly diminished in size. But we have a still more positive proof of this, in attempting to turn the child, for we

then feel very powerfully the action of the uterus, and the efforts which it makes to expel its contents. It is not just, however, to consider the action of the womb itself, as the sole agent in parturition; for in the second stage, the abdominal muscles do assist in the expulsion, not only by supporting the uterus, and thus enabling it to contract better, but also directly, by endeavouring to force the uterus, and consequently its contents, down through the pelvis. Two purposes are intended by the uterine action; the first is to open the os uteri, the second to propel the fœtus through it. Whilst, then, the fibres of the uterus itself contract, those of the os uteri must relax and dilate, and in proportion as the fœtus advances through the pelvis, the uterine fibres must shorten themselves. Thus the uterine cavity is gradually diminished, so that the placenta can very easily, by a continuation of the same process, be thrown off; and the uterine vessels having their diameter greatly lessened, hemorrhage is prevented after the separation of the placenta. There are then two processes taking place during parturition, contraction and relaxation, and these are in natural labour proportionate to each other. As the os uteri relaxes, the rest of the uterus increases in the activity of its contraction. This fact, I fear, has not been sufficiently attended to, and a very great mistake has often been made in supposing that there is greatest contractive or expulsive effort made when the resistance is greatest. This is no doubt true if we look to duration, but not if we attend to the degree exhibited in a given time. Were there no resistance offered, the uterus would contract at once, and expel the fœtus by a single effort; and this, or nearly this, in a few cases has taken place, and no great pain has attended the process. On the other hand, even a very slight resistance does in many cases diminish the degree of contraction or expulsive effort, and in proportion as this resistance is removed, so does the contraction increase. Hence, as the os uteri relaxes or opens, so does the expulsive power augment, and it is experience alone which can convince us how small a resistance may be the mean of parrying, if I may use the expression, the contraction of the fibres, or preventing them from acting briskly and quickly. Labour, therefore, is more certainly shortened, by promoting relaxation, and diminishing resistance, than by means

intended to stimulate to action. At the same time it must not be forgotten, that continued resistance does at last rouse up the uterine action, and call forth frequent and powerful efforts, often accompanied with great pain. These are more easily excited, when the resistance proceeds from the pelvis or perineum, and orifice of the vagina, or the position of the child, than when it arises from the state of the os uteri, or even of the membranes, in which case the uterine action is long feeble or inefficient. It is necessary farther to remark, that often a mistake is committed in confounding frequent and painful contraction of the uterus, with powerful and efficient action.

Parturition is a muscular action, and we might in one view conceive that it should be most speedy and easy in those who possessed a powerful muscular system, and great vigour. But this is far from being the case, for the process is tedious or speedy, easy or difficult, according to the relation which the power bears to the obstacle to be overcome. Now, in many weak and debilitated women, the parts very easily relax and dilate, and a very small power is required to complete the expulsion; whilst we often find, that those who possess a tense fibre, and great strength of the muscular system, accomplish the dilatation of the os uteri, not without much pain, and repeated efforts.

A fundamental principle then in midwifery is, that relaxtion or diminution of resistance is essential to an easy delivery: and could we discover any agent capable of effecting this rapidly and safely, we should have no tedious labour, excepting from the state of the pelvis, or position of the child. This agent has not yet been discovered. Blood-letting does often produce salutary relaxation, but it cannot always be depended on, neither is it always safe.

§ 5. MANAGEMENT OF LABOUR.

Women in a state of nature make little preparation for their delivery, and conduct the process of parturition without much ceremony. They retire to the woods, or seclude themselves in a hut or bower, until they bear the child; after which, if the religious

customs of their country do not require their separation for a time; they return to their usual mode of living.

In Europe, [and in a state of civilization generally,] we find that the process of parturition is conducted with more care, and is supposed to require greater preparation. Different countries have different customs in this respect. In some, women are delivered upon a chair of a particular construction; in others, seated on the lap of a female friend. Some women use a little bed, on which they rest, until the process is completed; and others are delivered on the bed on which they usually sleep. This last, for many reasons, is the best and most proper practice; but in order to prevent the bed from being spoiled, or wet with the liquor amnii or blood, and also from other motives of comfort, it is usual to make it up in a particular manner. The mattress ought to be placed uppermost, and a dressed skin, or folded blanket placed on that part of it on which the breech of the woman is to rest. The bed is then to be made up as usual; after which, a sheet folded into a breadth of about three feet, is put across the under fold of the bed-sheet. This is intended to absorb the moisture; and after delivery, if not during labour, that part which is wet, is to be drawn completely away, so that a dry portion may be brought under the woman. This arrangement is generally attended to by the nurse, whenever labour begins. When the pains begin, the woman generally dresses in dishabille; but when the process is considerably advanced, it is necessary to undress, and lie in bed. Some, at this time, put on a half shift, that is to say, one that does not reach below the waist, so that it is not liable to be wet. Others are satisfied with having the shift pushed up over the pelvis, so as to be kept dry; its place, in either case, is supplied with a petticoat. These, and other circumstances relating to dress, and to the quantity of bed-clothes, must be determined by the woman herself, and the season of the year.

It is of consequence that the room be not over-heated by fire, or the patient kept too warm with clothes. Heat makes her restless and feverish, adds to the feeling of fatigue, and often, by rendering the pains irregular or ineffective, protracts the labour. No more people should be in the room than are absolutely necessary. The

nurse and one female friend are perfectly sufficient for every good purpose; and a greater number, by their conversation, disturb the patient, or by their imprudence, may diminish her confidence in her own powers, and also in her necessary attendants. The mind, in a state of distress, is easily alarmed; and therefore whispering, and all appearance of concealment, ought to be prohibited in the room.

If the woman be disposed to sleep betwixt the pains, she ought not to be disturbed, but allowed to indulge in repose. If she have not this inclination, and be not fatigued, cheerful conversation, upon subjects totally unconnected with her situation, will be very proper.

Women have seldom an inclination for food whilst they are in labour; and, if the process be not long protracted, there is no occasion for it. If, however, the patient have a desire to eat, she may have a little tea or coffee, with dry toast, or a little soup, or some panado; but every thing which is heavy or difficult of digestion, must be avoided, lest she be made sick and restless, or have her recovery afterwards interrupted. Even very light food is apt at this time to sour, and cause heartburn.

Stimulants and cordials, such as spiced gruel, cinnamon water, wines, and possets, were at one time very much employed, but now are deservedly abandoned by those who follow the dictates of nature. Given in liberal doses, they are productive of great danger, disposing to fever or inflammation after delivery; and in smaller doses, they disorder the stomach, and often, instead of forwarding, retard the labour. If, however, the woman be weak, or the process tedious, then a small quantity of wine, given prudently, may be of considerable advantage.

Some women wish to keep out of bed as much as possible, in order that labour may be forwarded by walking about; others have the same desire, from feeling easier when they are sitting. In this respect they may be allowed to please themselves, but they ought to be as much as possible out of bed, provided they do not feel tired.

The urine ought to be regularly and frequently evacuated; and for that purpose, the practitioner should occasionally leave the

room. If the woman be costive, or the rectum contain fæces, a clyster ought always to be given early, which facilitates the labour. On the other hand, if the bowels be very loose, a few drops of tincture of opium may be given with much advantage.

It is immaterial in what posture the patient place herself during the first stage of labour; but in the second stage, when delivery is approaching, it is proper that she be placed on her side, and it is usual for her to lie on the left side, as this enables the practitioner to use his right hand. The knees are a little drawn up, and generally at this time kept separate by means of a small pillow placed between them. Many women wish to have their feet supported, or pressed against by an assistant, and it is customary to give a towel to grasp in the hand. This is either held by the nurse, or fastened to the bed post. We must, however, be careful that these contrivances do not encourage the woman to make too strong efforts to bear down.

When the woman is in bed, it is proper to have a soft warm cloth applied to the external parts, in order to absorb any mucus or water that may be discharged, and this is to be removed when it is wet.

Attempts to dilate the os uteri or the vagina, and the application of unctuous substances, to lubricate the parts, are now very properly abandoned by well instructed practitioners.

The membranes ought generally to be allowed to burst, by the efforts of the uterus alone, for this is the regular course of nature; and a premature evacuation of the water either disorders the process and retards the labour, or, if it accelerate the labour, it renders it more painful. I cannot, however, go the length of some, who say, that the evacuation of the water is always hurtful; for there are circumstances in which it may be allowable and beneficial. It is allowable when the os uteri is fully dilated, and the membranes protruded, perhaps even out of the vagina. In such a case, they would, in a few pains, at farthest, give way; but by rupturing them we can take precautions to keep the person dry, and more comfortable than she would otherwise have been. Even if the membranes are not considerably protruded, if the os uteri be completely dilated no injury can arise from rupturing them, for they ought, in

the natural course of labour, to give way at this time. But although the practice be not detrimental, yet it does not thence follow that it is always expedient; and it will be a useful rule to adhere to, that the seldomer we interfere in this respect in a natural labour, the more prudent shall our conduct be.

Examination ought, in the first stage of labour, to be practised seldom; but in the second stage we must have recourse to it more frequently; and, when the pains are becoming stronger and the head advancing, we must not leave the bedside. At this time we should be prepared for the reception of the child. A pair of scissors, with some short pieces of narrow tape, must be laid upon the bed or chair, and a warm cloth or receiver must be at hand, or spread under the clothes, to wrap the child in. As the fæces are generally passed at this time involuntarily, a soft cloth is to be laid on the perineum; and when the second stage of labour is drawing to a conclusion, the hand is to be placed on this, in order to prevent the rapid delivery of the head, and the consequent laceration of the perineum. This is a point of very great importance, and which requires to be carefully considered by the practitioner. There are several arguments against this practice; for we should, *a priori*, conceive, that as parturition is a natural process, it ought not in any part to be defective, or to require the regulation of art. Next, we should strengthen this doctrine, by finding, that in the savage state, a lacerated perineum is rarely discovered, and in all those women who are speedily delivered by themselves, the recto-vaginal septum is seldom torn. But on the other hand, the fact is ascertained beyond all dispute, that the perineum is sometimes lacerated, notwithstanding these presumptive proofs against the occurrence of the accident. This being ascertained, it becomes our duty, however rare the case may be, to determine its causes, and prevent its occurrence in every instance; for we cannot exactly say who the unfortunate individuals may be, to whom it is to happen. We may decidedly say, that the perineum is torn in consequence of distention; but in every delivery, the perineum must be distended, and in some to a great degree. In proportion to the facility of the distention, and the ease with which the vagina dilates, is the risk of laceration diminished. It has, therefore, become a

practical rule, to resist, with the hand placed on the perineum, the delivery of the head, until the parts be sufficiently relaxed; and this pressure ought to be exerted over the whole tumour, but especially at the fourchette; for although the perineum has been perforated by the head, which did not pass through the orifice of the vagina, yet usually, the rent begins at the fourchette and proceeds backwards to a greater or less degree. In every case, the fourchette, and a small part of the posterior surface of the vagina, are lacerated, though the integuments of the perineum remain sound. By firmly supporting the perineum, and at the same time, exhorting the woman not to force down during a pain, and thus retarding the delivery of the head until we feel the vulva, as well as the perineum relaxing, we may generally prevent laceration; and therefore this accident will seldom if ever happen in the hands of a prudent practitioner. Still it is possible for the perineum to be torn under good management. A little bit of it is not unfrequently lacerated, notwithstanding all our precaution; and although, in this slight degree, it is of no consequence, yet we thus see that art cannot completely prevent the accident. Sometimes the restlessness of the patient almost inevitably prevents the necessary precautions from being used;* and it may happen, that the frame is so very irritable, that the perineum unexpectedly lacerates at the time when it is supposed to be in a favourable state. As there must be some point where the resistance must stop, else the labour would be unnecessarily protracted, or perhaps even the uterus ruptured, it is possible that such resistance may be made, as generally is sufficient to prevent the accident, but which may not in some particular case, owing to the irritable state of the perineum, be adequate to the intended purpose; or the power of the uterus may be so strong as to expel the head, in spite of every allowable resistance; and in some of these cases it is possible for the perineum to be torn.

It is not sufficient that the practitioner support the perineum, until the head is going to be expelled; he must continue to do so

* Dr. Denman, a most worthy and experienced practitioner, with a candour which does him honour, akcnowledges, that from this cause the accident occurred in his own practice.

whilst it is passing out, for there is then a great strain on the part, as the forehead is passing over the perineum, and even the face moving along it, may produce injury. After the head is delivered, it is still necessary to place the hand under the chin, and on the perineum, for the arm of the child comes next to press against this part, and may either tear it by pressure, or by coming out with a jerk. Farther, to prevent injury and avoid pain, the body of the child should be allowed to pass out in a direction corresponding to the outlet of the pelvis, that is to say, moving a little forwards. But there is no occasion that the child should be carried forward betwixt the thighs, for, in a natural labour, the back of the child is directed to the thighs; he can easily bend and will naturally so incline himself in the delivery, as to take the proper direction. The last advice to be given respecting this stage of labour is, that as we retard rather than encourage the expulsion of the head, so we are not to accelerate the delivery of the body. Women in a state of pain call for relief, and expect that the midwife is to assist the delivery of the child; but no entreaties ought to make us hasten the expulsion of the head, and after that event, there is little inducement to accelerate the labour. Sometimes, in a few seconds, the child is expelled, but there may be a cessation of pain for some minutes. In the first case, we take care that the body be not propelled rapidly, and with a jerk: in the second, we attend to the head, examining that the membranes do not cover the mouth, but that the child be enabled to breathe, should the circulation in the cord be obstructed. There is no danger in delay, and rashly pulling away the child, is apt to produce flooding and other dangerous accidents. Should there, however, be a considerable interval betwixt the expulsion of the head, and the accession of new pains, we may press gently on the belly, or pull the child slightly, so as to excite the uterus to contract. Or, should the woman have several pains without expelling the body of the child, it may be allowable gently to insinuate the finger, and bring down the shoulder; but even this assistance is rarely required, and on no account ought we to attempt the delivery by pulling the head. Sometimes a delay is produced by the cord being twisted round the neck; and in this case, all we have to do, is to slip it off over the head.

The child being born, a ligature is to be applied on the cord very near the navel, and another about two inches nearer the placenta.*(e)* It is then to be divided betwixt them, and the child removed. The hand is next to be placed on the belly, to ascertain that there be not a second child;*(d)* and the finger may, for the same purpose, be slid gently along the cord to the os uteri. The hand of an assistant should be applied on the abdomen, and gently pressed on the uterus, which may excite it to action, and prevent torpor. If the placenta be not expelled soon, the uterine region may be rubbed with the hand to excite the contraction of the womb. Immediately after the expulsion of the child, there is often a copious evacuation of water, which is sometimes mistaken by the woman for a discharge of blood. But hemorrhage never takes place so instantaneously, in such quantity. It is generally a minute or two, sometimes much longer, before flooding come on; against the occurrence of this, we are to be on our guard.

(c) The ligature should not be applied, until the pulsation of the funis has ceased, or at least until the child has cried, that the new circulation now to commence may be thus properly established. Until this has taken place, the life of the child, according to Mr. White, is to be considered as merely fœtal, or as if it were yet *in utero*. Whilst there remains a pulsation of the arteries of the funis, it proves the existence of the fœtal life, and the existence of the fœtal life proves the imperfection of the animal life. Whilst the animal life, therefore, is imperfect, Mr. White lays it down as a rule, that the fœtal life ought not to be destroyed. The funis umbilicalis, therefore, should never be divided or tied, whilst there is any pulsation in its arteries. "By this rash inconsiderate method of tying the navel string, before the circulation in it is stopt, I doubt not (continues Mr. White) but many children have been lost, many of their principal organs have been injured, and foundations laid for various disorders." White on the Management of Pregnant and Lying-in Women, page 87.

Whilst on the subject of tying the funis, we may mention an observation of Sabatier, which is worthy of notice. He says that he has often known, in cases of congenital umbilical hernia, that the displaced intestines have protruded along the umbilical cord without much increasing its size, and have been tied by the ligature made on it, occasioning the death of the infant. Medicine Operatoire, Tom. I. p. 152.

(d) If a second child remain, we very distinctly feel the enlarged uterus between the pubis and umbilicus, and even above the latter, and not so much diminished in size as we should have previously supposed, but if there is no second child, we feel the uterus contracted into a small round ball, extending not far above the symphysis pubis.

The woman, after the delivery of the child, feels quite well, and expresses, in the strongest language, the transition from suffering to tranquility. But in a short time, generally within half an hour, one or two trifling pains are felt, and the placenta is expelled, which completes the last stage of parturition; and when the process goes on regularly, nothing is required in this stage, except watchfulness, lest hemorrhage supervene.

But it sometimes happens, that the placenta does not come away so early or so readily as we expect. It may be retained for many hours, or even for some days. This retention can be caused by preternatural adhesion of the placenta, or by the uterus contracting spasmodically round the placenta, forming a kind of cyst, in which it is contained; or the uterus may not contract on the placenta so strongly as to expel it. Some, from a confidence in the powers of nature, have inculcated as a rule of conduct, that unless flooding take place, the placenta ought not to be extracted. Others have, with equal zeal, advised it to be brought away immediately after the birth of the child. The safest practice seems to lie betwixt the two extremes. To leave the expulsion of the placenta altogether to nature, is a step attended with great danger; for so long as it is retained, we may be sure that the uterus has not contracted strongly and regularly. If then, in these circumstances, the placenta should be partially or completely detached, hemorrhage is very likely to occur. If it still adhere to the uterus, the risk of hemorrhage certainly is diminished, for those vessels alone, which opened on the decidua, can be exposed; but we have no security that this adhesion shall remain universal for any given time. As long, then, as the placenta is retained, the woman is never free from the risk of flooding. In many cases, she has died from this cause before the placenta was expelled; or if, after a long delay, the placenta has come away, its exclusion has sometimes been followed by fatal hemorrhage.* But this, although a dreadful accident, is not the only one arising from retention of the whole or part of the

* Mr. White has, in his Treatise on the Management of Pregnant and Lying-in Women, p. 507, related several cases where the practice of leaving the placenta to be expelled by nature alone, was productive of fatal hemorrhage; and in one instance, this event took place, although the placenta was at last expelled.

placenta. For great debility, constant retching, and fever, are often produced by this cause, and may ultimately carry off the patient.(e) It is therefore not without great reason, that women are anxious for the expulsion of the placenta; and this prejudice may have a good effect in operating against the conceits of speculative men, who suppose that nature is, in every instance, adequate to the accomplishment of her own purposes.

On the other hand, daily experience must convince every one, that there is no occasion for extracting the placenta immediately after the birth of the child, for it is usually expelled, with perfect safety, within forty minutes after the child is delivered. Nay, we find, that the speedy extraction of the placenta is directly hurtful; both as it is painful, and also as it is sometimes followed by uterine hemorrhage, or, if rashly performed, by inversion of the womb. The practice then, I think, may be comprised in two directions:—First, that we ought never to leave the bed-room, until the placenta be expelled; and, secondly, that if it be not excluded in an hour after delivery, we ought to extract it. This point being adjusted, it is next to be inquired, how the retention is to be prevented, and, if not prevented, how the placenta is to be extracted. With regard to the first question, it may be answered, that the placenta will be less apt to be retained, if the expulsion of the child be conducted slowly, and the uterus made to contract fully upon it. The action, if not likely soon to take place, may be sometimes excited by pressing on the uterine region, and rubbing the abdominal covering over the uterus, or gently grasping the womb through the relaxed parietes. As to the mode of extracting the placenta, we can be at no loss, if we recollect that the expul-

(e) The celebrated Ruysch, we are told, was the first to abandon the absurd practice of hasty extraction of the placenta, enlightened, no doubt, by his superior anatomical knowledge. Dr. Hunter in Great Britain, fully pointed out its impropriety. He however erred on the other extreme;

"Incidit in Scyllam cupiens vitare Charybdim."

Teaching that nature unassisted was adequate to the expulsion of the placenta in every case, he never interfered; but experience, says Dr. Hamilton, soon taught him the error of this practice; for by suffering the placenta to remain too long, he lost five patients of rank in one year.

sion is accomplished by the contraction of the uterus. Our object, then, is to excite this when the placenta is retained, in consequence of the womb not acting strongly. The hand is to be slid slowly and cautiously into the uterus, which is often sufficient to make it contract; but if it do not, the hand is to be moved a little, or pressed gently on the placenta, at the same time that we pull very slightly by the cord, or lay hold of the detached placenta with our hand, and with caution extract it slowly. This requires no exertion, for the uterus is pressing it down, and, if any force be used, we do harm. Attempts to bring away the placenta, by pulling strongly at the cord, whether the hand be introduced into the uterus or not, are always improper. If persisted in, they generally end, either in the laceration of the cord, or the inversion of the uterus.

There are two circumstances, however, under which the placenta may be retained, which require some modification of the practice. The first is, when the placenta is retained by spasm. In this case, when the hand is conducted along the cord through the os uteri, the placenta is not perceived, but it is led by the cord to a stricture, like a second, but contracted os uteri, beyond which the placenta is lodged. This contraction must be overcome before the placenta can be brought away, which may be accomplished by gradual attempts to introduce one, two, and ultimately all the fingers through it; and these, if cautiously made, are perfectly safe. It will, however, be observed, that the uterus, at short intervals, contracts, which is accompanied with pain; but this contraction is confined to the stricture alone, the cavity of the womb not being lessened by it; and during this state, all attempts to dilate the aperture are hurtful. We must be satisfied with keeping the fingers in their place, to preserve the ground we have gained. Opiates have been proposed to remove this spasm, and render the introduction of the hand unnecessary; they seldom, however, succeed alone, but given in a full dose they make the manual attempt more easy. Sometimes the sudden application of a cloth, dipped in cold water, to the belly, has the same effect. The second circumstance to which I alluded is, adhesion of the placenta, which usually is only partial. This may occur with or

without a change of structure; but in general, the structure is more or less altered, the adhering part being denser than usual, and sometimes almost like cartilage. The separation of the adhering portion should not be attempted hastily, nor by insinuating the finger between it and the uterine surface. It is better to press on the surface of the placenta, so as thus to excite the uterine fibres to contract more briskly at the spot; or by gently rubbing, or as it were, pinching up the placenta between the fingers and thumb, it may be separated. If, however, the adhesion of the part of the placenta be very intimate, we must not, in order to destroy it, scrape and irritate the surface of the uterus, but ought rather to remove all that does not adhere intimately, leaving the rest to be separated by nature.* But in taking this step, we are not to proceed with impatience, nor to attempt to bring away the non-adhering portion, until a considerable time has elapsed, and cautious efforts have been made to remove the entire placenta; thus satisfying ourselves of the existence of an obstinate and intimate union. Cases where this conduct is necessary, are very rare, and when they do occur, there is usually an induration of the adhering part. It is generally thrown off in a putrid state in forty-eight hours. Sometimes the placenta adheres when it is unusually tender and soft, and then we must, with peculiar care, avoid hasty efforts, by which the placenta would be lacerated, and part left behind, which would be hurtful afterwards; whereas by a little more patience, and gentle pressure on the surface of the placenta, the uterus might have been excited to throw the whole off.

* Dr. Smellie relates two cases of this kind. In the first, he brought away the indurated portion, but the woman died from hemorrhage. In the second, he left the adhering portion, and the woman recovered. Col. 23. c. 1 and 2. See also Gifford's Cases, c. 119 and 127: and La Motte, c. 358 and 362. In these, although the adhesion was very intimate, he brought away the placenta in pieces.

CHAP. III.

Of Premature Labour.

When a woman bears a child in the seventh or eighth month of pregnancy, she is said to have a premature labour; and this process forms a medium between abortion and natural labour.

In some cases, the uterus is fully developed before the usual term of gestation, and then contraction commences; but, in a great majority of instances, premature labour proceeds from accidental causes, exciting the expulsive action of the uterus, before the cervix and os uteri have gone through their regular changes. The cervix must, therefore, be expanded by muscular action, before the os uteri can be properly dilated; and this preparatory stage is generally marked by irregular pains, and not unfrequently by a feverish state, preceded by shivering. A feeling of slackness about the belly, with different anomalous sensations, often accompany this stage of premature labour. When the cervix is expanded, then the os uteri begins to dilate, and this part of the process is often more tedious than the same period of natural labour, and generally as painful. It is also frequently attended with a bearing-down sensation. The second stage of labour is usually expeditious, owing to the small size of the child. The decidua being thicker than at the full time, the protrusion of the membranes is attended with more sanguineous discharge; and if the woman move much, or exert herself, considerable hemorrhage may take place. The third stage is likewise slow, for the placenta is not soon thrown off. In the last place, spasmodic contraction of the uterus is more apt to take place in all the stages of premature than of natural labour.

A variety of causes may excite the action of the uterus prematurely, such as distention from too much water; or the death of the child, which is indicated by shivering, subsidence of the breasts, cessation of motion, and of the symptoms of pregnancy; or the artificial evacuation of the liquor amnii; or violent muscular exertion; or drugs acting strongly on the stomach and bowels; or pas-

sions of the mind; or acute diseases; or rigidity of the uterine fibres. Certain general conditions of the system render the operation of these causes more easy, such as plethora, debility, and great irritability. Colic in some instances, and diarrhœa in others, seems to be a cause, and in such cases anodyne clysters are useful. Premature labour is often preceded by severe shivering, during or immediately before which the child dies, and in some time thereafter, pains come on. It is worthy of notice that a much larger proportion of premature labours are preternatural, than of labours at the full time.

A tendency to premature labour is to be prevented by the means pointed out when treating of abortion. I have only to add, that when the abdomen is tense and hard, or painful, indicating a rigidity of the uterine fibres, or of the abdominal muscles, tepid fomentations, gentle laxatives, and repeated small bleedings, are useful.

When a woman is threatened with premature labour, we ought, unless there be very decided marks of the death of the child, to endeavour to check the process, which is done by exhibiting an opiate, keeping the patient cool and tranquil, and removing any irritation which may exist. If she be plethoric or the pulse be throbbing, blood is to be detracted.

When labour is established, it is to be conducted much in the same way with parturition at the full time; but the following observations will not be improper. The patient must avoid much motion, lest hemorrhage be excited. Frequent examination and every irritation are hurtful, by retarding the process, and tending to produce spasmodic contraction. If this contraction take place, marked by paroxysms of pain referred to the belly or pubis, little or no effect being produced on the os uteri, a full dose of tincture of opium should be given, after the administration of a clyster. Severe pains, with premature efforts to bear down, and a rigid state of the os uteri, require venesection, and afterwards an opiate. The delivery of the child is to be retarded, rather than accelerated in the last stage, that the uterus may contract on the placenta. This is farther assisted, by rubbing gently the uterine region after delivery. If the placenta be long retained, or hemorrhage come

on, the hand is to be gently introduced into the uterus, and pressed on the placenta, to excite the fibres to throw it off; or we may stimulate the uterus to act, by rubbing externally. We should not rashly attempt to remove it, for we are apt to tear it; neither are we to pull the cord, for it is easily broken. In those cases where premature labour is connected with redundance of liquor amnii, I think it useful to introduce the hand immediately on the delivery of the child, for I have observed, that the placenta is apt to be retained by irregular contraction. We do not instantly extract the placenta, but it is desirable to get the hand in contact with it before the circular fibres contract. Great attention is to be paid to the patient for some days after delivery, as she is liable to a febrile affection, which may be either of the inflammatory type, or of the nature of weed, to be afterwards noticed.

CHAP. IV.

Of Preternatural Labour.

Various signs have been enumerated, by which it was supposed, that malposition of the child might be discovered antecedent to labour. An unusual shape of the abdomen; some peculiar feeling of which the mother is conscious, and which she has not felt in any former pregnancy; greater pain or numbness in one leg than in the other; a sensation of the child rising suddenly towards the stomach, have all been mentioned as indicating this, but are all, even when taken collectively, uncertain tokens. We cannot determine the presentation until labour has begun. In a great majority of instances, the head, during the end of gestation, may be felt resting on the cervix uteri; but, in repeated instances, I have not been able to distinguish it in a pregnancy which ended in natural labour. Sometimes, in consequence of a fall, or other causes, the head seems to recede, but afterwards returns to its proper position.

When labour begins, we may generally distinguish the head by its proper character; but if it lie high, and especially if the pelvis be deformed, we may not find it always easy to ascertain the presentation at a very early period. In such cases, it is of great consequence to preserve the membranes entire. When the head does not present, the presentation is generally more distant, and longer of being distinctly ascertained,* the lower part of the uterus is more conical, and the tumour formed by the cranium cannot be felt through the membranes or cervix uteri: when the finger touches the part through the membranes, it very easily recedes, or seems to rise up. If the child lie more or less across the uterus, the os uteri is generally long of being fully dilated, the membranes protrude like a gut, and sometimes, during the pains, the woman complains of a remarkable pushing against the sides. The pains are severe, but in cross presentation, she is sensible that they are not advancing the labour.

It is a fact well ascertained, that although the head have been felt distinctly in the commencement of labour, yet when the membranes break, it may be exchanged for the shoulder,† or some other part. On this account, as well as for other reasons, it is always proper to examine immediately after the membranes have given way.

ORDER 1. PRESENTATION OF THE BREECH.

The breech is distinguished by its size and fleshy feel, by the tuberosity of the ischia, the shape of the ilium, the sulcus between the thighs, the parts of generation, and by the discharge of meco-

* When the presentation is long of being felt, we have been advised to examine the woman in a kneeling posture, or even to introduce the hand into the vagina, and rupture the membranes. The last advice is sometimes useful, as it enables us, if the presentation require it, to turn the child at a time when it can be easily done. But this is not to be hastily practised, nor adopted till the os uteri be well dilated, or at least quite dilatable.

† I have been informed of a case, where the shoulder was exchanged for the head, and Joerg seems to have met with the same circumstance. Hist. Partus, p. 90.

nium, which very often takes place in the progress of labour.* After the breech has descended some way into the pelvis, the integuments may become tense or swelled, so as to make it resemble the head. Before the membranes burst, the presentation is usually very mobile, and bounds up readily from the finger; but in some instances it is from the first firmly pressed down in the pelvis, and felt through the uterus very much resembling the head.

Many have advised, that when the breech presented, the feet should be brought down first; but the established practice now is, when the pelvis is well formed, and other circumstances do not require speedy delivery, to allow the breech to be expelled without any interference, until it has passed the external parts.

The breech, and consequently the body of the child, may vary in its position with regard to the mother;(f) but there are chiefly two situations requiring our attention, because the rest are ultimately reduced to these. First, where the thighs of the child are directed to the sacro-iliac junction of the pelvis; and secondly, where they are directed to the acetabulum. In either of these cases, delivery goes on with equal ease, until the head comes to pass. Then, if the thighs have been directed to the fore part of the

* A discharge of liquor amnii, apparently coloured with meconium, is no proof that the breech presents, neither is it a sign that the child is dead.

(f) Baudelocque has divided the presentations of the breech into four positions. In the

1st. The child's back is towards the mother's left side, and a little forward. But in proportion as it descends, its greatest breadth becomes parallel to the *antero-posterior* diameter of the inferior strait; the left hip placing itself under the pubes, and the right before the sacrum.

2nd. The child's back is towards the right side of the uterus, and a little forward; the right hip placing itself under the arch of the pubes, the left being turned towards the sacrum.

3rd. The spine of the child's back is turned directly towards the umbilicus of the mother. Although it is allowed seldom to descend in this position.

4th. The spine of the child is towards the sacrum of the mother, and its abdomen towards the anterior and middle part of the uterus of the mother. As it descends, the breadth from one hip to the other becomes parallel to one of the oblique diameters of the pelvis.

pelvis, the face will also be turned toward the pubis, and cannot clear its arch so easily as the vertex.

When the thighs are directed to the back part of the pelvis, we find that the process of delivery is as follows: the breech generally descends obliquely, one tuberosity being lower than the other. The lowest one follows the same turns as the vertex does in natural labour, and observes the same relation to the axis of the brim and outlet of the pelvis. The breech is expelled with one side to the symphysis of the pubis, and the other to the coccyx; and after the presenting tuberosity protrudes under the arch of the pubis, the other clears the perineum, like the face in natural labour. Whilst the breech is protruding, it gradually turns a little round, so that the shoulders of the child come to pass the brim diagonally, the diameter from the acetabulum to the sacro-iliac junction being the greatest. The breech being delivered, a continuance of the pains pushes it gradually away, in the direction of the axis of the outlet, until the legs come so low as to clear the vagina. When this takes place, the head is generally passing the brim obliquely, the face being turned toward the sacro-iliac junction; and most frequently the arms pass along with it, being laid over the ears. They then slip down into the vagina, by the action of the uterus, and the head alone enters the cavity of the pelvis. The face turns into the hollow of the sacrum, and the chin tends towards the breast of the child. Then it clears the perineum, which slips over the face, and the vertex comes last of all from under the pubis. If, however, the chin be folded down on the breast, before the head has descended into the pelvis, then, from the unfavourable way in which it enters the brim, there may be some difficulty to the passage, for it in some respects resembles a presentation of the face. The hand should be introduced, and the face pressed up. In one case, Dr. Smellie found so much difficulty, that he applied the crotchet on the clavicle.

Now the management of this labour is very simple. Whilst the breech is coming forth, the perineum is to be supported, and nothing more is to be done till the knees are so low as to be on a line with the fourchette. If they do not naturally bend, and the feet slip out, the finger of one hand is to be employed to bend the leg

gently, and bring down the foot; the knee, in this process, pressing obliquely on the abdomen of the child. But whether the legs be expelled naturally, or be brought down, we must carefully protect the perineum lest it should be torn by a sudden stroke of the leg in passing. Next the cord is to be pulled gently down a little, to make the circulation more free. Thirdly, we attend to the arms; if these do not descend by the natural efforts, we introduce a finger, and gently bring down first one, and then the other, using no force, lest the bone should break. The perineum is also to be guarded, to prevent a slap of the arm from injuring it. Fourthly, if the head do not directly turn down, the finger is to be carried up, and placed upon the chin or in the mouth, in order gently to depress it toward the breast, and this is generally sufficient. To guard the perineum, the hand must be applied on it, and the body of the child moved near the thighs of the mother, that the vertex may more readily rise behind the pubis whilst the face is passing. If the body be, on the contrary, removed farther from the mother, and nearer the operator, the head can neither pass so easily into the pelvis, nor out from the vagina. In a natural labour, after the head is expelled, the whole body should be allowed to be slowly born by the efforts of the womb alone. But in breech cases, should the process, after the breech is expelled, be slow, the delivery of the body and head must, by the means I have related, be accelerated, lest the umbilical cord suffer fatal compression. The first symptom of danger is a convulsive jerk of the body, and if the head be not speedily brought down, the child will be lost. Should delay inevitably arise, we must try to bring the cord to the widest part of the pelvis. But even although all pressure could be removed, the child cannot live long, if it be not delivered, as the function of the placenta is soon destroyed, that organ being often entirely detached from the womb, following the head whenever it is born.

When the thighs, in breech cases, are directed to the pubis or acetabulum, then the face cannot turn into the hollow of the sacrum. It rests for some time on the pubis, and it comes out with difficulty under the arch; for in breech and footling cases, the face is generally born before the vertex. In order to prevent this

difficulty, it will, as soon as the breech is expelled and the feet are delivered, be proper to grasp the breech, and slowly endeavour to turn the body round; but, should this not succeed, or not have been attempted till the shoulders have come down, and the head is about to pass the brim, the practice is dangerous, and the neck may be materially injured. It is, in this case, better to introduce a finger, and press with it on the head itself, endeavouring thus to turn the chin from the acetabulum to the sacro-iliac junction of the same side. If the position be not rectified, then we assist the descent by depressing the chin, and gently bringing it under the pubis; and this may be facilitated by pressing the vertex upward and backward, and making it turn up on the curve of the sacrum, to favour the descent of the face. We must be careful of the perineum.

When the pelvis is contracted or deformed, it will be prudent, at an early stage of the labour, to bring down the feet. But if this have been neglected, then, should the difficulty of delivery, or the length of time to which the labour is protracted, require it, some insinuate a blunt hook, or a soft ribband over one of the groins, and thus extract the breech; but the forceps may be applied with much more advantage. When the resistance is slight, the insinuation of the fingers over the groin, may sometimes enable us to use such extracting force, as at least excites the uterus more briskly to expel. Should the head not easily follow the body, we must not attempt to extract it by pulling forcibly at the shoulders, as we may thus tear the neck, and leave the head in utero.* The cord is, first of all, to be freed as much as possible from compression; then we gently depress the shoulders in the direction of the axis of the brim, at the same time that we with a finger act upon the chin. Should this not succeed, we must apply the finger over the head, and depress in the proper direction. If this fail, the only

* La Motte, Chapman, Smellie, and Perfect, give examples of the head being left in utero without the body, and the body without the head. There are chiefly two sources of danger: the first and most immediate is uterine hemorrhage; the second is the consequence of putrefaction, which produces sickness, nausea, fever, and great debility. The head may be extracted, by fixing a finger in the mouth, or by the crotchet, with or without perforation.

resource is to open the cranium above or behind the ear, and fix a hook in the aperture; but this is not to be done until we have fully tried other means, and by that time the child will be dead.

When the breech presents, and parturition is tedious, the parts of generation are often swelled and livid. When the parts are merely turgid a little, and purple from congestion of venous blood, nothing is necessary to be done. But when inflammation takes place, it is more troublesome, for being of the low kind, it is apt to end in gangrene. Fomentations are useful, but often spiritous applications succeed best.

ORDER 2. OF THE INFERIOR EXTREMITIES.

Presentation of the feet is known, by there being no rounded tumour formed by the lower part of the uterus.*(g)* The membranes also protrude in a more elongated form than when the head or breech present. The presenting part, when touched during the remission of the pain, is felt to be small, and affords no resistance to the finger. When the membranes break, we may discover the shape of the toes and heel, and the articulation at the ankle. Sometimes both the feet and the breech present. Two circumstances contribute to an easy delivery; first, that the toes be turned toward the sacro-iliac junction of the mother; and

(g) Baudelocque distinguishes four principal positions of the feet, to which he considers all the rest may be referred. Of these four positions he constitutes as many species of labour. In the

1st position, the heels answer to the left side of the pelvis, and a little forward; the toes to the right side, and backward, nearly opposite the sacro-iliac symphysis. Above that symphysis are placed the breast and face; while the back is situated under the anterior and left lateral part of the uterus.

In the 2d position, the heels are towards the right side of the *pelvis*, and the toes to the left and a little backward. The *trunk* and head are so situated, that the breast and face answer to that part of the *uterus* which is over the left *sacro-iliac symphysis*, and the back to the anterior and right lateral part of that *viscus*.

In the 3d position, the heels are turned towards the pubes, and the toes to the *sacrum*. The child's back is under the anterior part of the *uterus*, and its breast answers to the *lumbar vertebræ* of the mother.

The 4th position is exactly the reverse of the 3d; the child's back and heels are towards the posterior part of the *uterus*, while the toes, the face and breast are under its anterior part.

secondly, that both feet come down together. The best practice is to avoid rupturing the membranes till the os uteri be sufficiently dilated; then we grasp both feet, and bring them into the vagina; or, if both present together at the os uteri, we may allow them to come down unassisted. In either case, we do not accelerate the delivery till the cord is in a situation to suffer from pressure, that is, till the knees are fully protruded, and the thick part of the thighs, near the breech, can be felt; then, if the face be towards the belly of the mother, we grasp the thighs, and gently turn the body round. The management is the same as in breech cases. There is little danger of the feet of two different children being brought down together, as twins are included in separate membranes. But as the case is possible, it is proper to ascertain that the feet be right and left.

Sometimes a knee and foot, or the knees alone, present;*(h)* and as they form a larger tumour than the feet, they may at first be taken for the breech or the head. Generally only one knee presents, and it lies obliquely, with its side on the os uteri. It is known by its shape, and the flexure of the joint. Some advise that the case should be left altogether to nature, but it is often advantageous to bring down the feet.

ORDER 3. OF THE SUPERIOR EXTREMITIES.

When the shoulder or arm presents, the case has the general character of preternatural presentations.*(i)* The round tumour,

(h) Baudelocque distinguishes four principal positions of the knees also.

In the first position, the child's legs, which are always bent when the knees present, are towards the mother's left side, and the thighs towards the right side.

In the 2d, the thighs answer to the left side of the *pelvis*, and the legs to the right.

In the 3d, the anterior part of the thighs is turned towards the sacrum of the mother, and the legs are under the *pubes*.

In the 4th, it is the reverse, the child's thighs being behind the *pubes* of the mother, and the legs placed against the *sacrum*.

(i) The presentations of the shoulder are divided into four species by Baudelocque. In the

1st. The side of the neck rests on the edge of the *os pubis*, and the side of the

formed by the head in natural labour, is absent, whilst we can ascertain the shape and connection of the arm and shoulder. A shoulder presentation can only be confounded with that of the breech. But in the former case, the shape of the scapula, the ribs, the sharpness of the shoulder joint, and the direction of the humerus, together with our often feeling in our examination either the hand or neck, will be distinguishing marks. In the latter, the round shape and greater firmness of the ischium, the size of the thigh, its direction upwards, and its lying in contact with the soft belly, the spine of the ilium, the parts of generation, the size of the tuberosity of the ischium, and the general shape of the back parts of the pelvis, contribute with certainty to ascertain the nature of the case.

The hand and arm may present under different circumstances. The original presentation may have been that of the shoulder, but the arm may have, in the course of the labour, been expelled; or the hand may rest upon the os uteri, before the membranes have broken; or the fore arm may, for a length of time, lie across the os uteri, the hand not being protruded for some hours. Sometimes both hands are felt at the os uteri, and even both arms may be expelled into the vagina; but in most cases this does not happen, unless an improper conduct be pursued. In some rare instances, the hands of twins have been found presenting together, both sets of membranes having given way; it is more common to find both the hands and feet of the same child presenting; and this, next to the

breast over the *sacrum*, so that the fore part of the breast is towards the left *iliac fossa*, when the right shoulder presents, and towards the right *iliac fossa* when it is the left shoulder.

In the second position, the side of the neck is over the superior edge of the *sacrum*, and the side, properly so called, is over the *pubes*; the breast answers to the right *iliac fossa*, when the right shoulder presents and *vice versa*.

In the third, the neck and the head rest on the left *iliac fossa*, while the side and the hip are over the right; so that the back is placed transversely under the anterior part of the *uterus* when it is the right shoulder, and on the posterior part of that viscus, when it is the left.

The child is also placed transversely in the fourth position of the shoulder, but the head lies in the right *iliac fossa*, and the lower part of the trunk over the left; the breast is under the anterior part of the *uterus* when it is the right shoulder, and over the *sacrum* when it is the left.

presentation of the feet alone, is the easiest case to manage.* It is not uncommon, in this case, to find the cord presenting at the same time, and then, by delay, the child may be lost.

In most cases where the superior extremities present, the feet of the child are found in the fore part of the uterus, toward the navel of the mother. But their situation may be known, by examining the presentation. If we feel the shoulder, we know, that if the scapula be felt toward the sacrum, the feet will be found toward the belly. If the arm be protruded into the vagina, the palm of the hand is found in pronation, directed toward the side where the feet lie. It is easy to know which hand presents. If we examine with the right hand, we shall find, that if the palm of the child's hand be taken into ours in a state of pronation, the thumb of the right hand, or the little finger of the left hand, will correspond to our thumb.

In these preternatural presentations, the ancients were acquainted with the practice of turning, and delivering the child by the feet. But their remarks on this subject formed no general rule of conduct; on the contrary, practitioners were almost invariably in the habit of endeavouring to remove the presentation, and to bring the head to the os uteri. Paré was among the first who advised turning as a general practice; but even his pupil Guillimeau disregarded the rule, and left it to Mauriceau to enforce it, both by reasoning and practice.† There may, however, be cases, where it would not only be safe, but also more proper to resort to the old practice, although, as a general rule, it ought to be abandoned. For instance, if the patient be known usually to have a short labour, if the pains be brisk, the os uteri dilated, or in a relaxed and easily dilatable state, the liquor amnii retained, and the child move-

* If the uterus be firmly contracted, the liquor amnii having been all evacuated, it may sometimes be necessary to carry the hand up to the knees, to change the situation.

† Mauriceau justly observes, that although, after much fatigue, (the water having run off,) the head can be brought to the os uteri, the woman may not have strength to finish the delivery.—In a case mentioned by Dr. Smellie, the patient died of flooding.—Joerg still admits the propriety of bringing the head, when it is nearer than the feet, to the os uteri, or the fœtus is so placed, that the feet cannot, without difficulty and danger, be brought down.

able, then the head may, without any difficulty, or much irritation, be placed in the proper position, with a fair and reasonable chance of success. The labour, no doubt, is slower than if we had brought down the feet, but the child is in much less danger. On the other hand, if the liquor amnii have been evacuated, or any irritation attend the rectification of the presentation, it is better at once to bring down the feet, and ensure a delivery, safe at least to the mother. Were the head in such a case made to present, the irritation employed might throw the uterus into spasmodic action; or it might not act with any efficiency, and a tedious labour, of the worst and most dangerous kind, might be the consequence of this injudicious practice, whereby both parent and child might be lost.

We should be careful, in all cases, not to rupture the membranes prematurely; and more effectually to preserve them entire, we must prevent exertion, or much motion, on the part of the mother. As soon as the os uteri is soft, and easily dilatable, the hand should be introduced slowly into the vagina, the os uteri gently dilated, and the membranes ruptured. The hand is then to be immediately carried into the uterus, and, if we have decided on turning, upwards until the feet are found. Both*(k)* feet are to be grasped betwixt our fingers, and brought down into the vagina, taking care that the toes are turned to the back of the mother. The remaining steps have been already described. This operation is not very painful to the mother; it is easily accomplished by the accoucheur, and it is not more hazardous to the child than an original presentation of the feet. But it is necessary, in order to render this assertion correct, that the operation be undertaken before the liquor amnii be evacuated; and it is of importance to fix upon a proper time. We are not to attempt the introduction of the hand whilst the os uteri is hard and undilated; this is an axiom in practice; on the other hand, we are not to delay until the os uteri be dilated so much, as to be apparently sufficient for the passage

(k) It is not absolutely necessary that both feet should be found and grasped, in the first instance; it will be sufficient to find and bring down one, if both cannot be easily reached, the second foot, with proper management, (to be hereafter directed,) will soon follow.

of a bulky body. In the cases now under consideration, the os uteri does not dilate so regularly, and to so great a degree, before the membranes break, as when the head presents. If we wait in this expectation, the membranes will give way before we are aware. If the os uteri be dilated to the size of half a crown, thin and lax, the delivery ought not to be delayed, for every pain endangers the rupture of the membranes. If they do give way, we are immediately to introduce the hand, and will still find the operation easy, for the whole of the water is not discharged at once, nor does the uterus immediately embrace the child closely. If the liquor amnii have been discharged in considerable quantity previous to labour, or if the membranes have burst at the commencement of it, when the os uteri is firm and small, we must, by a recumbent posture, try still to preserve a portion of the waters, till the orifice will permit delivery. The introduction of the hand into the vagina and os uteri may be rendered easier, and less painful, by previously dipping it in oil or linseed tea, or any other lubricating substance.

But if the water have been long evacuated, then the fibres of the uterus contract strongly on the child, the presentation is forced firmly down, and the whole body is compressed so much, that the circulation in the cord frequently is impeded, and, if the labour be protracted, the child may be killed. This is a very troublesome case, and requires great caution. If the pains be frequent, and the contraction strong, then all attempts to introduce the hand, and turn the child, must not only produce great agony, but, if obstinately persisted in, may tear the uterus from the vagina, or lacerate its cervix or body. After a delay of some hours, however, the uterus may be less violent in its action, but it is better at once to moderate it by art. Copious blood-letting, certainly, has a power in many cases of rendering turning easy, but it impairs the strength, and often retards the recovery. If the patient be restless and feverish, it may, to a certain extent, be necessary and proper; but if not, we shall generally succeed, by giving a powerful dose of tincture of opium, not less than sixty or eighty drops. Previous to this, the bladder is to be emptied, lest it should be ruptured during the operation; and, if necessary, a clyster is to be adminis-

tered. The patient is then to be left, if possible, to rest. Sometimes in half an hour, but almost always within two hours after the anodyne has been taken, the pains become so far suspended, as to render the operation safe, and perhaps easy. Our first object is to get the hand into the uterus; and for this purpose, we must raise up the shoulder a little, working the fingers past it, by slow, cautious, but steady efforts. The cervix often contracts spasmodically round the presentation, and is the chief obstacle to the delivery, but the opiate generally allays this.* Sometimes our efforts renew the pains, which, although they may not prevent the operation, make it more painful, and cramp and benumb the hand. Having passed the hand beyond the cervix, we carry it on betwixt the body of the child and the surface of the uterus, which is felt hard and smooth, from the tonic or permanent action of the fibres, until we reach the feet, both of which, if possible, we seize and bring down; but if we cannot easily find both, one is to be brought down into the vagina, and retained there.(l) The child will be born, with the other folded up on the belly. In bringing down the feet, as well as in carrying up the hand, we must not act during a pain, but should keep the hand flat on the child; a contrary practice is very apt to lacerate the uterus. Before introducing the hand, we must ascertian, by examining the presentation, which way the feet lie, that we may proceed directly to the proper place. We must also consider, whether we shall succeed best with the right or the left hand. If the right shoulder or arm present, some have made it a rule to deliver with the left hand, others with the right; but much must depend on the dexterity of the operator, and the position of the woman. The most common position is the same as in natural labour. Sometimes we may find it useful to make the woman lie forward on the side of the bed, with her feet on the ground, and to place ourselves behind her.

* The spasm may yield rather suddenly to the hand, as if rupture of the fibres had taken place. I was informed of one case of this kind, but the womb was entire, and no bad symptoms came on.

(l) By means of a noose applied round the ancle.

When the hand and arm have been protruded, and the shoulder forced down in the vagina, it has been the practice with many, before attempting to turn, to return the arm again within the uterus; and when this was impracticable, it has been torn or cut off, *(m)* especially if the child was supposed to be dead. Others advise, that we should not attempt to reduce the arm; nay, even that we could, in difficult cases, facilitate the operation, by bringing down the other arm, in order to change, to a certain degree, the position of the child. So far from it being necessary to replace the arm, we shall sometimes find advantage from taking hold of it with one hand, whilst we introduce the other along it; as the parts are thus a little stretched, and it serves as a director by which we slip into the uterus.

By the means pointed out, and by a steady, patient conduct, we may, in almost every instance, succeed in delivering the child. But it must be acknowledged, that in some cases, from neglect or mismanagement, the woman is brought into great danger, or may even be allowed to die undelivered. This catastrophe proceeds sometimes from mere exhaustion, or from inflammation, but oftener, I apprehend, from rupture of the uterus; or in a neglected case, so much irritation may be given to the system, as well as to the parts concerned in parturition, that although the delivery be easily accomplished, the woman does not recover, but dies, either from pulmonic or abdominal inflammation, or fever, or flooding. Moreover, such tedious cases generally end unfavourably for the child.

When turning has not been practicable, if the child was supposed to be alive, the os uteri has been cut, or the cæsarian operation has been proposed and practised.* If dead, it has been

(m) We would strenuously dissuade from unnecessarily mutilating the fœtus, even under the supposion of its death. We have known the child born with symptoms of life, even after the head has been opened, and the greatest portion of the brain evacuated; and born alive, after its death had been considered as certainly ascertained. It can seldom, if ever, be necessary to take off the arm to facilitate the operation of turning.

* Vide memoir by M. Baudelocque, in Recueil Period. Tome V. table 1. cases 5 and 15.

extracted, by pulling down the breech with a crotchet;* and sometimes, in order to assist delivery, the body has been mutilated,† or the head opened with the perforator. It is in general sufficient to carry the finger between the perineum and the thorax to the abdomen, pierce it, and either by means of the finger or a hook fixed on the pelvis, it may be pulled down. This ought always to be done, when, on the one hand, the presentation cannot be raised to admit of turning; nor, on the other, is there any appearance of the process immediately to be described, under the name of spontaneous evolution, taking place.

When the child has been small or premature, it has happened that the arm and shoulder have been forced out of the vagina, and then, by pulling the arm, the delivery has been accomplished.‡ In other cases, the child has been expelled double. In a greater number of instances, a spontaneous evolution or turning of the child has taken place, and the breech has been expelled first. The action of the uterus is exerted in the direction of its long axis, and therefore tends to push its contents through the os uteri. The child forms an ellipse; and either in natural labour, or presentation of the breech, the long axis of the ellipse corresponds to the long axis of the uterus. But, in a shoulder presentation, the axis of the ellipse lies obliquely with regard to that of the uterus, or to the direction of the force; and therefore the continued action of the uterus may tend, by operating on the side of the ellipse, to depress the upper end, and force it gradually into the pelvis. Dr. J. Hamilton justly observes, that the evolution can only take place when the action of the uterus cannot be exerted on the presenting part, or where that part is so shaped that it cannot be wedged in the pel-

* Peu, in one case where both arms were protruded, applied a fillet over the breech to bring it down. Pratique, p. 412.—Smellie, in 1722, brought down the breech with the crotchet. Col. 35. case 3.—Gifford did the same in 1725. Case 3.

† Vide Perfect, Vol. I. p. 351.—Dr. J. Hamilton's Cases, p. 104. He found it necessary to separate three of the vertebræ.—Dr. Clarke twisted off the arm, and perforated the thorax freely. At the end of 36 hours the fœtus was expelled double. Med. and Phys. Jour. Vol. VIII. 394.

‡ Gifford, case 211; and Baudelocque L'Art, § 1530, in a note.—In Mr. Gardiner's case the head followed the shoulders. Med. Comment. V. 307.

vis. It may also be added, as a requisite, that the uterus contract efficiently, and not spasmodically. This occurrence was first of all noticed, I believe, by Schœnheider;* but Dr. Denman† was the first who, in this country, called the attention of practitioners to it. He collected no less than thirty cases, but in these only one child was born alive. It does not appear that the child being large, is an obstacle to the delivery.‡

A diversity of opinion has prevailed as to the mode in which expulsion takes place. Dr. Denman supposed that the lower extremities descended during a pain, and made room for the upper, which were received into the uterus as the others came down, till, the body turning round on its axis, the breech was expelled, "as in an original presentation of that part." This was disputed by Dr. Douglas, who maintained that it was impossible for the upper extremities to mount up into the contracting uterus; and that therefore no part of the child, which once protruded, ever receded; and consequently the process is not that of spontaneous turning, but that of expelling the child double. According to him the shoulder is forced lower by strong pains; the clavicle lies under the arch of the pubis; the ribs press out the perineum, and then appear at the orifice of the vagina. As the expulsion goes on, the clavicle is found on the pubis, and the acromion rises to the top of the vulva. Presently the arm, shoulder, and one side of the chest, are protruded, and the breech has got into the hollow of the sacrum. By farther efforts the breech and extremities are expelled, but neither the arm nor the shoulder ever retire.

Dr. Kelly agrees with Dr. Denman, as to the existence of an actual revolution or turning of the child; but differs from him in maintaining that the original presentation can only recede, not during the action of the uterus, but during its relaxation. The breech, or upper end of the ellipse, he supposes, is pressed down by the

* Acta Havn. Tom. II. art. xxiii.

† Lond. Med. Jour. Vol. V. p. 64.—See also case by Mr. Outhwait, in New Lond. Med. Jour. Vol. II. p. 172.—Mr. Simmons Med. Facts and Obs. Vol. I. p. 76.—Perfect's cases, II. 367.—Med. and Phys. Journ. Vol. III. p. 5.—and Medico-Chirurgical Review, Vol. I. second series.

‡ Mr. Hey's case, in Lond. Med. Jour. Vol. V. p. 305.

action of the uterus, and then, by the elasticity of the child, the shoulder, or presenting part, goes up the moment the uterus relaxes. There is much apparent justice in the observation; but nevertheless it is not free from objection. Every one who has had his hand in the uterus, in order to turn the child, must know, that the inner surface feels hard, smooth, and polished; and that having laid hold of the feet, it requires very little effort during a pain to draw them down; as the breech was pressed on in the direction from the fundus to the os uteri. If every part of the uterus acted alike, and there were no os uteri, it is evident that the whole child should be equally squeezed, and its superficies pressed more closely to the centre; if there be an opening in the contracting cavity, there must be a tendency to press the contents towards that: and this is the principle on which natural labour is founded. But if the contents cannot pass through this opening, or through the pelvis, as is the case in presentation of the arm; then, either the uterus must, after exhausting itself, cease to act, or its fibres will give way, or if the presentation be placed in so oblique and favourable a mode as to permit of it, the under end of the ellipse, or the presenting part, will glide up along the smooth uterus, in proportion as the upper end is depressed: and there is nothing more impossible, so far as uterine contraction is concerned, in the child revolving during the action of the uterus, by the efforts of the womb on the upper end of the ellipse, than that we should, during the uterine contraction, find the shoulders with facility go up, merely by drawing gently at the feet. The action of the uterus, if the head be placed obliquely, and the presenting part, or, what is of more consequence, the head within the uterus, be placed in such a manner as to allow it to glide as on an inclined plane, may assuredly make the child revolve. The steps in this process are very distinct: first, the presentation is forced as low as the uterus can bring it; that is, the shoulder is brought to the perineum: second, when it can pass no further, the strong action of the uterus, pressing down the other end of the child, makes it turn on the resisting part, as on a pivot, whilst the head slides up along the inclined plane. This may farther be aided by the elasticity of the child, operating during the relaxation of the uterus, in making the pre-

sentation ascend. But this cannot be the only cause, nor can the objection of Drs. Douglas and Kelly be well founded, otherwise the process never could take place with that rapidity which it sometimes does: indeed it is never long when it begins; it may be long of commencing, but it is soon accomplished. In one of Dr. Denman's cases, (the third) he says, "the exertions of the mother were wonderfully strong. I sat down whilst she had two pains, by the latter of which the child was doubled, and the head expelled." Is this compatible with the theory of the child not receding during the action of the uterus? Either the presenting part did not recede at all, as is maintained to be the case invariably by Dr. Douglas; or it must have receded during the single pain which effected the process. We expect the evolution to take place when the shoulder has protruded at the os externum, the perineum become more distended by the body of the child, the pains are strong, and not spasmodic, but universal, and there is a tendency in the shoulder to move forward, and the breech or trunk to descend. When turning is impracticable or dangerous, and nature appears to have begun this process, it is generally hurtful to interfere. If any aid is to be given, the direction in which the shoulder should be made to move, may be learned from the detail of the progress of the evolution.

A knowledge of this fact does not exonerate us from making attempts to turn; for although a considerable number of cases are recorded where it has taken place, yet these are few in proportion to the number of presentations of the shoulder. In this city, [Glasgow] which contains not less than 150,000 inhabitants, I cannot learn that more than one case of spontaneous evolution has taken place, though some women have either died undelivered, or have not been delivered until it was too late to save them.*

* Delivery by *spontaneous evolution* is a very rare occurrence. But that it occasionally happens is proved beyond suspicion by the cases recorded by Dr. Denman and other respectable practitioners. Considering the difficulty and even danger often incident to turning, it is certainly important to know how to distinguish those particular cases in which this curious resource of nature will probably be successfully exerted. To warrant such an expectation, it must clearly appear that the uterine action, instead of operating on the presenting part, fixing it

Sometimes the arm presents along with the head, and this can only render delivery tedious or difficult, by encroaching on the dimensions of the pelvis. This case does not require turning; but if we can, we should return the arm beyond the head; if we cannot we may succeed in bringing it to a place where it will not interfere much with the passage of the head. In a case most probably at first of this description, the arm had protruded as in an ordinary presentation of the upper extremity, and the shoulder had descended as low as the os externum. Mr. Wansbrough, carrying his finger from the presentation along by the curve of the sacrum, felt the chin of the child, the face presenting within the pelvis, and the occiput reflected against the vertebræ of the child. Very strong pains had no effect in propelling the child; but delivery was effected by means of the long forceps.*

Sometimes the head is placed pretty high, being retained by a spasmodic contraction of a band of fibres round it, and the arm is the only presentation which can be felt, until the hand be introduced. Opiates, in this case, may be of service. We must never attempt by force alone to destroy the stricture, in order either to return the arm or bring down the head.

Occasionally both a hand and the feet have been found presenting with the head, or the feet and head present. In such cases, we can, if necessary, bring down the feet altogether, and this is in general proper.

Besides these presentations, we may meet with the back part of the neck, and the upper part of the shoulder; or the nape of the neck alone; or the throat.(*n*) These, which are very rare, require turning. They are recognised by their relation to the head and shoulders.

more closely in the pelvis, has the contrary effect of displacing it, and gradually bringing it out of the pelvis. But, if we are convinced after a careful examination that there is no tendency to *spontaneous evolution*, we should proceed to turn the child, as in proportion to the delay of the operation is commonly the hazard attending it. C.

* Med. Repository. Vol. XIII. p. 8.

(*n*) Of each of these, Baudelocque has constituted four varieties of presentations; for a synopsis of which we must refer to the table, which the reader will find at the end of this volume.

ORDER 4. OF THE TRUNK.

The hips, back, belly, breast, or sides, may, though very rare y, present, the child lying more or less transversely.(*o*) The hip is sometimes taken for the head,* but is to be distinguished by the shape and relations of the ilium. In all the other cases, the presentation remains long high; but when the finger can reach it, the precise part may be ascertained by one who is accustomed to feel the body of a child. If the child lie transversely, it may remain long in the same position, and the woman may die if it be not turned. But if, as is more frequently the case, it be placed more or less obliquely, then, if the pains continue effective and regular, either the breech or the shoulder will be brought to the os uteri, according as the original position favoured the descent of one or other end of the ellipse formed by the child. In these presentations, the hand should be introduced, to find the feet, by which the child is to be delivered. But, this rule is not absolute with regard to the presentation of the hip, which only renders labour tedious.

ORDER 5. OF THE FACE, &c.

The child may present the head, and yet it may be improperly situated, and give rise to painful and tedious labour.

1st. The forehead, instead of the vertex, may be turned to the acetabulum.(*p*) In this case, the presentation is felt in the first stage high up, smooth, and flatter than usual. In a little longer, we discover the anterior fontanelle, and the situation of the sutures. By degrees the head enters the cavity of the pelvis, the vertex

(*o*) Of each of these presentations there are also, according to Baudelocque, four varieties; for an enumeration of which, the reader is referred to the table at the close of the volume.

* La Motte was of opinion that no part resembled the head more than the hip. Vide Obs. 283 and 284.

(*p*) This includes the fourth and fifth presentations of the vertex, according to the division of Baudelocque, and have already been explained in our note on the Classification of Labours, Book II. chap. 1.

being turned into the hollow of the sacrum; and by continuance of the pains, the forehead either turns up within the pubis, and the vertex passes out over the perineum; or the face gradually descends, and the chin clears the arch of the pubis, the vertex turning up within the perineum towards the sacrum till the face is born. The first is the usual process in this presentation; all the steps of the labour are tedious, and often, for a considerable period, the pains seem to produce no effect whatever. In the last stage, the perineum is considerably distended, and it requires care and patience to prevent laceration. This presentation is difficult to be ascertained, at an early stage, before the membranes burst; and sometimes the duration of the labour is attributed to weakness of the uterine action, and not to the position of the head. If it be discovered early, it is certainly proper to rupture the membranes, and turn the vertex round; a proceeding which is easily accomplished, and which prevents much pain and fretfulness. If this opportunity be lost, we may still give assistance. Dr. Clarke says, that, in thirteen out of fourteen cases, he succeeded in turning round the vertex, by introducing either one or two fingers between the side of the head near the coronal suture, and the symphysis of the pubis, and pressing steadily, during a pain, against the parietal bone.*(q)* Of the advantage of this practice, I can speak from my own observation; and I have, even when the head had descended so low as to have the nose on a line with the arch of the pubis, succeeded in turning the face round to the hollow of the sacrum with great promptitude, and with so much facility, that the patient did not know that I was doing more than making an ordinary examination. Some have advised, that we should keep up the fore-

(*q*) The editor can also unite from his own experience, in recommending the attempt at altering and correcting this *malposition* of the head, as above recommended; it has often proved successful in his own practice. It will be found that this mode of proceeding was first inculcated by Baudelocque, from observing that nature herself sometimes obviated difficulties, and accelerated the termination of the labour, by converting the fourth position into the second, and the fifth into the first; or, in bringing the posterior fontanelle from the right or left sacro-iliac symphysis, to the right or left acetabulum. Vide Art des Accouchemens.

head during a pain, to make the vertex descend; or that we should, with the finger, depress the occiput.

The fontanelle, or crown of the head, may also present, although the face be turned to the sacro-iliac junction. In this case it is felt early, and, by tracing the coronal suture, we may ascertain whether the frontal bones lie before or behind. It is a much more uncommon presentation than that noticed above. The labour is, at first, a little slower than in a natural presentation, but, by degrees, the head becomes more oblique, the vertex descending; and this may be assisted, by supporting the forehead with the finger during a pain. Should any untoward accident require the delivery to be accelerated, we have been advised to turn the child, and, in doing so, to use the left hand, if the occiput lie on the left acetabulum, and *vice versa*. But this operation can seldom be requisite.

The crown of the head may also present with the face to the pubis or the sacrum, but these positions are extremely rare.*(r)* In time, the head will generally become more diagonal, and descend obliquely, but we ought not to trust to this. We should rectify the position, for it is by no means difficult to move the head with the finger, if we attempt it early. We may even carry the forehead from the pubis to the sacro-iliac junction. The process is still more simple, when the occiput is turned to the pubis, if we perform it early. If, however, we neglect it, we find that in a few instances the head does not turn at all, but enters the pelvis in the original direction, and becomes wedged,*(s)* requiring the use of instruments. This is oftenest the case, when the occiput is turned to the pubis; for the forehead being broad, does not, by a continuance of labour, slip to the side of the promontory of the sacrum so readily as the occiput would do.

2d, The side of the head may present. In this case, the presentation is long of being felt, but it is recognised by the ear. If, how-

(r) These constitute the third and the sixth positions of the vertex, according to Baudelocque. The comparative infrequency of their occurrency is illustrated in the table, appended to the chapter on the Classification of Labours.

(s) This by the French writers is termed *enclavement*, and by the English impaction, or the locked head.

ever, it has been long pressed in the pelvis, it is extremely difficult to determine the case. It is very rare, and has even been deemed to be impossible. In some instances the child has been turned, but it is most common to rectify the position of the head, by introducing the hand.

3d, The occiput may present, the triangular part of the bone being felt at the os uteri. It is known by its shape, by the lambdoidal suture, and its vicinity to the neck. The forehead rests on some part of one of the psoæ muscles, and from this oblique position of the head, the labour is tedious. It has been proposed, in this case, to turn; but it is better, if we do any thing, to rectify the position of the head with the hand. Nature is, however, adequate to the delivery, even if not assisted. Some advise, that the woman should, by a change of position, endeavour to remedy the obliquity, making the child incline, so as to affect the situation of the head, but this has not much power in altering the position of the presentation, at least after the water has been evacuated.

4th, The face may present with the chin to one of the acetabula, or to the sacro-iliac junction, or to the pubis or sacrum. The first two are the best, the second is more troublesome, and the last is worst of all. When the face presents, the labour is generally tedious and painful, for it is little compressible, and affords a broad surface, not well calculated to take the proper turns in the pelvis. The head, also, being thrown back on the neck, a larger body must pass, than when the chin is placed on the breast. By a continuance of the pains, the face becomes swelled; and although at first it was recognisable by the mouth and features, yet now it is indistinct, and has been taken either for a natural presentation or the breech. By rude treatment, the skin may be torn; and even under the best management, the face, when born, is very unseemly, and sometimes quite black and elongated, so that it has been known to measure nearly seven inches. This is especially the case when the chin is directed to the sacrum, and some children die from obstructed circulation, owing to the continued pressure on the jugular veins.

Face presentations have been attributed sometimes to convulsive vomiting, cough, or frequent examination, but generally no evident

cause can be assigned; and in the beginning of labour, the face itself does not present, but only the forehead: hence La Motte tells us, that although at first he thought the head presented properly, yet, when the membranes broke, the face came down.

Some have advised that the child should be turned; others that the chin should be raised up, to make the upper part of the face come down; or that if the head be advanced, a finger should be inserted into the mouth, to bring down the jaw under the pubis. Others leave the whole process to nature; but many endeavour with the hand to rectify the position.

If the presentation be discovered early, there can be little doubt as to the propriety of rectifying the position, but if the labour be advanced, this is difficult; and then it only remains that we should endeavour, if the labour be severe and tedious, to make the face descend obliquely, by cautiously but firmly supporting with a finger, during the pains, the chin or end which is highest, in order to favour the descent of the lower end. When the chin has advanced so far as to come near the arch of the pubis, we may follow a different method, and gently depress it, which assists the delivery, for generally the chin is first evolved. If, however, the process go on regularly and tolerably easy, we need not make these attempts. As the perineum is much stretched, we must support it, and avoid all hurry in the exit of the head.

When the chin is directed to the sacrum, the labour is sometimes so tedious as to require the application of instruments.

ORDER 6. OF THE UMBILICAL CORD.

Sometimes the cord descends before or along with the presenting part of the child. This has no influence on the process of delivery, but it may have a fatal effect on the child; for, if the cord be strongly compressed, or compressed for a length of time, the child shall die, as certainly as if respiration were interrupted after birth. If the cord be discovered presenting before the membranes burst, or if the os uteri be properly dilated when they burst, the best practice is to turn the child. It has indeed been proposed, to push

the presenting part, or hook it upon one of the limbs; but, if the hand is to be introduced so far, it is better at once to turn the child. If the os uteri be not sufficiently relaxed, we must not use force to expand it; and little can be done, except by rest, to prevent as much as possible, the evacuation of the water. As soon as the os uteri will admit the introduction of the hand, the child should be turned, if it can be easily done. But if the presentation be advanced before we are called, and turning be difficult, then we must endeavour to keep the cord slack, or remove it to that part of the pelvis where it is least apt to be compressed; or it will be still better, to endeavour with two fingers to push the cord slowly past the head, and prevent it, for two or three pains, from coming down again.*(t)* This is less violent, and safer, than attempts to turn in an advanced stage of labour. Should this not be practicable, and the pulsation suffer, or the circulation be endangered, we must accelerate labour by the forceps. If the pulsation be stopped, and the child dead, when we examine, then labour may be allowed to go on, without paying any attention to the cord. The sum of the practice then is, that when the os uteri is not dilated, so as to permit of turning, we must not attempt it; when turning is practicable, it is to be performed; when the head has descended into the pelvis, the cord is to be replaced, or secured as much as possible from pressure; but if the circulation be impeded, the woman must be encouraged to accelerate the labour by bearing down, or instruments must be employed. When the presentation is preternatural, these directions are likewise to be attended to, and the practice is also to be regulated by the general rules applicable to such labours.

(t) Mauriceau, in these cases, recommends turning the funis, and pushing a piece of soft linen after it, the end of which may remain hanging without. Dr. Mackenzie, a celebrated accoucheur of London, in a case where the funis presented, pulled down as much as he could, which he enclosed in a leathern purse; and thus returned it, pushing them up together into the uterus; in this case the child was born alive. He afterwards pursued the same practice, and sometimes succeeded; and others have since followed his example.

ORDER 7. PLURALITY OF CHILDREN AND MONSTERS.

Various signs have been mentioned, whereby the presence of a plurality of children in utero might be discovered, previous to their delivery. These are, an unusual size, or an unequal distention of the abdomen, an uncommon motion within the uterus, a very slow labour, or a second discharge of liquor amnii during parturition. These signs, however, are so completely fallacious, that no reliance can be placed upon them, nor can we generally determine the existence of twins, until the first child be born. Then, by placing the hand on the abdomen, the uterus is felt large,* if it contain another child; and, by examination per vaginam, the second set of membranes or some part of the child, is found to present. This mode of inquiry is proper after every delivery.

Soon after the first child is born, pains usually come on like those which throw off the placenta, but more severe; and they have not the effect of expelling it, for it is generally retained till after the delivery of the second child. No intimation of the existence of another child is to be given to the mother, but the practitioner is quietly to make his examination, rupture the membranes, if they have not given way, and ascertain the presentation. If it be such as require no alteration, he is to allow the labour to proceed according to the rules of art, and usually the expulsion is very speedily accomplished. If the first child present the head, the second generally presents the breech or feet, and *vice versa;* but sometimes the first presents the arm, and, in that case, when we turn, we must be careful that the feet of the same child be brought down. This one being delivered, the hand is to be again introduced, to search for the feet of the second child, which are to be brought into the vagina, but the delivery is not to be hurried.

It sometimes happens, that after the first child is born, the pains become suspended, and the second is not born for several hours.

* In a case related by Mr. Aitkin, the uterus was felt, after delivery, large and hard, as if it contained another child, but none was discovered. In the course of a fortnight the tumour gradually disappeared. Med. Comment. Vol. II. p. 300.

Now this is an unpleasant state, both for the patient and practitioner. She must discover that there is something unusual about her; he must be conscious that hemorrhage, or some other dangerous symptom, may supervene. The first rule to be observed is, that the accoucheur is upon no account to leave this patient till she be delivered. The second regards the time for delivering. Some have advised that the case be entirely left to the efforts of nature, whilst others recommend a speedy delivery. The safest practice, if the head present, lies between the two opinions. If effective pains do not come on in a quarter of an hour, the child ought to be delivered by turning. The forceps can seldom be required; for if the head have come so low as to admit of their application, the delivery most likely shall be accomplished without assistance. If the second child present in such a way, as that the feet are near the os uteri, as for instance, the breech, or any part of the lower extremities, then the feet are cautiously, but without delay, to be brought down into the vagina, and the expulsion afterwards left, if nothing forbid it, to nature.

If, however, the position of the second child be such as to require turning, we are to lose no time, but introduce the hand for that purpose, before the liquor amnii be evacuated, or the uterus begin to act strongly on the child. Turning, in such circumstances, is generally easy.

In the event of hemorrhage, convulsions, or other dangerous symptoms, supervening between the birth of the first and second child, the delivery must be accelerated, whatever be the presentation, and managed upon general principles.

When there are more children than two, the woman seldom goes to the full time, and the children survive only a short time. There is nothing peculiar in the managament of such labours.

It still remains to observe, that we ought to be peculiarly careful in conducting the expulsion of the placentæ of twins. Owing to the distention of the uterus, and its continued action in expelling two children, there is a greater than usual risk of uterine hemorrhage taking place. The patient must be kept very quiet and cool, moderate pressure should be made with the hand externally on the womb, or gentle friction may be employed, and no forcible

attempts are to be permitted, for the extraction of the placentæ, by pulling the cords. If hemorrhage come on, then the hand is to be introduced to excite the uterine action, and the two placentæ are to be extracted together. The application of the bandage, and other subsequent arrangements, must be conducted with caution, lest hemorrhage be excited.

The placentæ are often connected, and therefore they are naturally expelled together, but this adds nothing to the difficulty of the process. Sometimes they are separate, and the one is thrown off before the other; or it may even happen, that the placenta of the first child is expelled before the second child be born, but this is very rare, and is not desirable.

Women, who have borne a plurality of children, are more disposed than others to puerperal diseases, and must therefore be carefully watched. It rarely happens, that they are able to nurse both children without injury.

It is possible for two children to adhere, or for one child to have some additional organ belonging to a second, as, for example, an arm or a head. Such cases of monstrosity may produce considerable difficulty in the delivery; and the general principle of conduct must be, that when the impediment is very great, and does not yield to such force as can be safely exerted, by pulling that part which is protruded, a separation must be made, generally of that part which is protruded, and the child afterwards turned, if necessary. Unless the pelvis be greatly deformed, it will be practicable to deliver, even a double child, by means of perforation of the cavities, or such separation as may be expedient, and the use of the hand, forceps, or crotchets, according to circumstances. A great degree of deformity may render the cæsarean operation necessary.

With respect to children who are monstrous from deficiency of parts, I may take the present opportunity of observing, that no difficulty can arise, during the delivery, except in ascertaining the presentation, if the malformation be to a great extent, as, for instance, in acephalous children.

CHAP. V.

Of Tedious Labour.

ORDER 1. FROM IMPERFECTION OF MUSCULAR ACTION.

If the expulsive force of the uterus be diminished, or the resistance to the passage of the child be increased, the labour must be protracted beyond the usual time, or a more than ordinary degree of pain must be endured.

Tedious labour may occur under three different circumstances:

First, The pains may be from the beginning weak or few, and the labour may be long of becoming brisk.

Second, The pains during the first stage, may be sharp and frequent, but not effective; in consequence of which the power of the uterus is worn out before the head of the child have fully entered into the pubis, or come into a situation to be expelled.

Third, The pains, during the whole course, may be strong and brisk, but from some mechanical obstacle, the delivery may be long prevented, and it may even be necessary to have recourse to artificial force.

It is farther necessary for me to premise, that the same patient, in different labours, shall be delivered with varying celerity and ease, although the size of the children be the same. The protraction, therefore, cannot depend on purely mechanical causes, but is rather to be attributed to resistance afforded by the soft parts, as living organs, and the state of action of the uterine fibres. The delivery of the child depends on contraction of the uterus, and relaxation of its orifice, and that of the vagina, and muscles connected with the perineum; and these two processes are not only influenced by, but are also generally proportionate to each other. Easy and speedy relaxation is productive of rapid and great contraction, which is not to be measured or determined by the degree of pain or sensation, but of efficiency. Powerful contraction of the uterus, is attended with proportionally rapid relaxation of the opposing

soft parts, or at least of the os uteri; and if the latter state do not take place, the former cannot easily exist. When mechanical assistance does stimulate to more frequent and violent action, it is often more in appearance than reality, at least so far as the uterus is concerned. The sensation may be greater, but the actual effort made by the uterus, is not always so great as the sensation would imply. The abdominal muscles act more powerfully, and doubtless the uterus itself is at last roused or excited to strong action, when the resistance is continued, as for instance, by a contracted pelvis, or bad position of the child. The patient says, she feels as if she would burst; and in some cases the uterus is actually ruptured, but in many more inflammation is excited by the efforts. Nevertheless, even in this kind of resistance, which does not depend on the os uteri, it is usual for the action of the uterus at first to be impeded; the primary stage of labour is slow, and the pains inefficient. But this is more remarkably the case, when the resistance is seated in the os uteri; for then, although the pains may be frequent, they are long of becoming powerful. Then the abdominal muscles co-operate strongly and press down the uterus, along with the head, into the pelvis. This is particularly illustrated by cases of morbid contraction, or obliteration of the os uteri.

Various causes may protract labour; and although I have thought it right to divide tedious labour into two orders; yet, in point of fact, the causes sometimes operate in such a way, as to make the case a mixed one, referable partly to both divisions. They may be arranged under the following heads: First, feeble or sluggish and languid action of the uterus. Second, partial or spasmodic action of the uterus. Third, restrained action, the energy of the uterus being prevented from being put forth by some other cause. Fourth, an unusual obstacle to the issue of the child. These states or causes, may be excited by circumstances in many respects differing from one another, and which, at first view, we would not suppose to act on one principle. The most important of these, we must presently consider separately. When again we come to view the means which we possess of counteracting their causes, and accelerating labour, in order that we may choose the one best adapted to the case, we find that they may be referred to the following:

First, diminishing resistance, or promoting relaxation, which increases contraction. Under this head may be included blood-letting, gently dilating the os uteri, rupturing the membranes, improving the position of the presentation. Second, exciting the action of the uterus by stimulating its fibres, directly or by sympathy. Under this head may be included, the effect of cordials prudently given, heat, friction, gentle exercise, clysters, spontaneous vomiting.(u) Third, suspending weak and useless, or wearing-out, action, by a suitable anodyne, in order that the energy of the womb and of the system may recruit by rest. Fourth, removing partial or spasmodic action by a full dose of opium. Fifth, allaying general irritation of the system, which is interfering with the individual action of the uterus, by a small or moderate dose of laudanum, and thus concentrating the action in the uterus; or premising venesection, if the state of the vascular system indicate this. Sixth, removing undue action from other parts, which are acting in place of the uterus, and checking or subducting its action, on the principle of the sympathy of equilibrium, which I have alluded to in page 340, and more fully explained in another work. Seventh, if none of these are applicable or effectual, then it only remains to employ artificial or instrumental aid.

Having made these general remarks, I now proceed to consider

(u) In cases where the contractions of the uterus are inefficient from want of energy or irregular action of the uterine fibre, provided the cervix and os uteri, as well as the external parts are sufficiently dilated or disposed to dilate; recourse may be advantageously had to the ergot, or spurred rye. Under these circumstances the editor has frequently derived the most decided advantage from its use, given in fine powder, in the dose of about one scruple in syrup, and has seldom had occasion to repeat it. In about twenty minutes after the exhibition of the article, the contractions of the uterus are invigorated, and the process accelerated in some instances probably several hours.

In judicious and discriminating exhibition, this article of the materia medica may be considered as a valuable acquisition in the practice of midwifery; although, like all other powerful medicines, in rash and inexperienced hands may possibly do harm.

For fuller information on this subject the reader is referred to the papers of Drs. Stearns, Prescott, and Bigelow.

The credit of introducing this medicine into obstetrical practice generally, is exclusively due to the practitioners of the United States.

particular states. The first to be noticed is, that dependent on a weak or inefficient action of the uterine fibres. This may be occasioned by general debility or inactivity, but more frequently it proceeds from the state of the uterus itself. It is marked by feeble pains, which dilate the os uteri slowly, and are long of forcing down the head. But although the pains be feeble, they may produce as great sensation as usual, for this is proportioned rather to the sensibility than to the vigour of the part. It is, however, usual, when labour is protracted from this cause, for the pains to be less severe than in natural labour. They may come much seldomer, or, if frequent, they may last much shorter, and be less acute. The whole process of labour is sometimes equally tedious, but, in most cases, the delay principally takes place in one of the stages, generally in the first, if the cause exist chiefly in the uterus. If, however, it proceed from general debility, we often find, that if the first stage be tedious, the powers are thereby so exhausted, that the second can with difficulty be accomplished. Hence, although consumptive patients often have a rapid delivery, yet if the first stage be slow, the head frequently cannot be expelled without assistance. It is not always easy to say what the cause of this slow action of the uterus is. Sometimes it proceeds from contraction commencing rather prematurely; or from the membranes breaking very early, and the water oozing slowly away; or from some other organ becoming too active; or from the uterus being greatly distended by liquor amnii, or a plurality of children; or from fear, or other passions of the mind operating on the uterus; or from torpor of the uterine fibres, frequently combined with a dull leucophlegmatic habit, or with a constitution disposed to obesity; or from general weakness of the system.

In a state of suffering and anxiety, the mind is apt to exaggerate every evil, to foresee imaginary dangers, to become peevish or desponding, and to press with injudicious impatience for assistance, which cannot safely be granted. Great forbearance, care, and judgment, then, are required on the part of the practitioner; who, whilst he treats his patient with that gentleness and compassionate encouragement, which humanity and refinement of manners will dictate, is steadily to do his duty, being neither swayed by her

fears and entreaties, nor by a selfish regard to the saving of his own time.

Some women seem constitutionally to have a lingering labour, being always slow. In such cases, unless the process be considerably protracted, or attended with circumstances requiring our interference, it is neither useful nor proper to do more than encourage the patient, and preserve her strength.

A variety of means were at one time employed for exciting the action of the uterus, such as forcible dilatation of the os uteri, and the use of emetics, purgatives, or stimulants. A very different practice now happily obtains; the patient is kept cool, tranquil, and permitted to repose; the mildest drink is allowed; all fatiguing efforts are prohibited; and she is encouraged by the mental stimuli of cheerfulness and hope, rather than by wine and cordials. But, whilst in cases where labour is only a little protracted, and the cause not very well marked, we trust entirely to this treatment, with the addition of a saline clyster, which is of much service, and ought seldom to be omitted, yet, where it is longer delayed, some other means are allowable, and may be necessary.

The pains in tedious labour, connected with defective uterine action, may be continuing regular, but weak, not from exhaustion, but rather from the uterus not exerting the power it has; or there may be a tendency to remit, the pains coming on seldom. In the first of these states, we have to consider whether there be heat of the skin, full pulse, with thirst and restlessness. If so, and especially if the os uteri be not relaxed, venesection will be of great benefit, by making the uterus act with more freedom, and its mouth yield with great readiness. We know that in most cases of uterine hemorrhage, the os uteri, even where there is no effective labour, and scarcely any pain, is not merely dilatable, but is partially dilated. In this instance, however, the benefit of evacuation cannot be derived, for the discharge injures and impairs the whole power of the uterus, and in proportion as the os uteri is extended, the quantity of the blood which flows is increased; besides, the evacuation usually begins before labour commences, and pains do not come on till the loss of blood excite them. We learn, however, from this example, the influence of hemorrhage in relaxing the os

uteri, and if we can do this without impairing the power of the womb, we have certainly a powerful mean of accelerating labour; venesection does this in certain cases. It can do no good, but much harm, in cases of exhaustion, or in cases where the resistance is afforded by a contracted pelvis, and all other circumstances are right. But in cases where the parts, through which the child must pass are rigid or dry, or hot and tender, or where the pains are great, but irregular and inefficient, or the membranes have given way prematurely, the pains sharp, but abortive, and the os uteri thick or hard, or the patient is feverish, blood-letting is safe, and may be expected to do good. That it is safe, we know from the experience of former ages and other countries, as well as from our own observation in cases of convulsions, where a great quantity of blood is taken away with present advantage and future impunity. It is, however, a remedy, which if imprudently employed, may do much mischief. In cases of exhaustion, for instance, it must be dangerous; and in every constitution, and under every circumstance in which it would, independent of labour, be improper to evacuate, it is evident that it will be hurtful, unless we can thereby save the patient prolonged exertion and exhaustion. In natural labour, it is neither necessary nor proper; in labour not greatly protracted, nor unusually severe and slow in its steps, it is not to be resorted to. It is better to trust, in these cases, to the use of clysters, to gentle motion and change of posture, or to sleep, if it offer naturally, and the patient require to be recruited.

The effect of venesection in shortening the process of labour, and in rendering the pains in many cases brisker, is to be explained by its power in relaxing the parts, and diminishing the resistance afforded. It is a fact not sufficiently attended to, that in many cases a very moderate resistance, which we should think the uterus might easily overcome, does retard the expulsive process, and render the pains irregular or inefficient. Thus, I know from experience, that the membranes may be so tough as not readily to give way, and in this case the pains do become less effective, and the labour is protracted till they are opened. Whenever the resistance is removed, the pains become brisk and forcing. In the

same way, relaxing the os uteri by blood-letting, excites the uterine fibres to brisker action.

If the woman be fatigued or debilitated, and the pulse weaker than in lingering labour, we shall derive advantage from the use of a smart clyster, followed by thirty drops of laudanum, or a proportional quantity in an injection. This does not suspend the pains, but rather excites them. A similar stimulus is sometimes given by a gentle purge, but this is more slow and uncertain in its effects.

When there is a strong tendency in the pains to remit, or keep off, we are to follow pretty nearly the same conduct with regard to venesection, in the circumstances which I have pointed out, as admitting of it; but it is much more rarely required in those cases, than where the pains are less frequent. When it is employed, it either procures a remission and sleep, followed by brisk action, or it excites more immediately the pains; for whatever diminishes the resistance or obstacle, whatever produces relaxation, speedily acts as a stimulus to the uterus to contract: cordials and stimulants are more doubtful in their effect. If, however, blood-letting be improper, we give a clyster, and then forty drops of laudanum, which either makes the pains effective and brisk, or suspends them for a time, till the womb recruit.

There is another state in which the pains are weak, or remiss, or are ineffective from absolute exhaustion or debility; and we distinguish this case by the weak pulse, languor, and previous fatigue, and in part by the constitution of the woman. This is the only case in which cordials are proper, and they must even here be given prudently, lest they produce a febrile state. It is also useful to suspend for a time the uterine action, and procure rest by an anodyne clyster. We must take care that we do not delay delivery too long, or trust too much to nature.

Premature rupture of the membranes, is apt to occasion spasmodic action of the uterus, or irregular and inefficient pains; besides, a little water passes between the head of the child and the os uteri during every pain, and the effect is rather to press out gradually the water, than to open the os uteri, which is seldom effectually

acted on, till the whole, or almost the whole water, has been evacuated, so as to allow the head to be pressed on the orifice, and the uterine fibres to act on that orifice over the presenting part. In a natural state, the bag remains entire, until the os uteri have been considerably opened, and every pain gently dilates it, both by the uterus acting on the orifice, and also by the membranes when pushed out, doing naturally, what is effected in some cases artificially by the finger, that is, mechanically dilating the mouth. The pressure of the membranes also excites active pains. When the presentation is preternatural, the os uteri is longer of opening than when the head presents; the membranes do not protrude so broadly, nor does the presentation act so well on the os uteri, or excite it so effectually. Whilst rupture of the membranes, then, may in some cases prove a useful stimulus, in others, when it is without judgment or necessity resorted to, it must be prejudicial. If the water be discharged very early in labour, or before the pains come on, the process is often lingering, but is not always so. The os uteri is, when we first examine, projecting, then it becomes flat, but the lips thick; then they become thinner and more dilated, and presently very thin; and the lower part of the uterus is perhaps applied so closely to the head, that at first it might be taken for the head itself. In favourable cases these changes may take place quickly, but they may also be very slow, and the labour tedious, the pains sharp and ineffective, and the water discharged in small quantity with each pain. The pains are severe, but produce very little effect, and often when they go off, are succeeded by a most distressing uneasiness in the back, lasting for nearly a minute after the pain; indicating in general the existence of spasmodic action. A saline clyster is of much benefit in this kind of labour; and it is useful to press up the head, especially during the pains, to favour the evacuation of the water; for, whenever this is accomplished, naturally or artificially, the action becomes much stronger. It is also useful to detract blood, if the os uteri be rigid, the parts not disposed to yield, and the pains very severe. It is peculiarly proper when the woman has rigours. When the organs are firm, and the pains are lingering, it causes relaxation, and quickens the pains. If, on the other hand, the os uteri be lax and

thin, or soft, it is both safe and advantageous to dilate it gently with the finger during a pain. If this be done cautiously, it gives no additional uneasiness, whilst the stimulus seems to direct the action of the uterine fibres more efficiently towards the os uteri, which sometimes thus clears the head of the child very quickly, and the pains which formerly were severe, but, in the language of the patient, unnatural, and doing no good, become effective and less severe, though more useful. This advice, however, is not meant to sanction rash and unnecessary attempts to dilate the os uteri, which sometimes render labour more tedious by interrupting the natural process, and also lay the foundation for inflammatory affections afterwards. When the pains are irregular, and are succeeded by aching of the back, if the state of the os uteri do not indicate venesection, a full dose of laudanum, not less than forty drops, may be given with advantage.

In the case I have just considered, I have spoken of the effects of dilating the os uteri, but I do not mean to say, that the practice is useful in such a case alone; for, in most cases of tedious labour, it is beneficial, and, as the subject is important, I shall explain my sentiments on it fully. Forcible and irritating dilatation of the os uteri, even when it is not productive of dangerous consequences, is apt to occasion irregular or spasmodic action of the uterus. Two circumstances are necessary to render it safe: the os uteri must be lax and dilatable, and the dilatation must be gradually and gently effected during the continuance of a natural pain. If attempted in the absence of pain, and especially if attempted so as to give pain, it is apt to excite partial or spasmodic action, and, under any circumstance, violent or forcible dilatation, besides injuring the uterine action may lay the foundation of future disease. It is done best by pressing on the anterior edge of the os uteri, during a pain, with two fingers, with such moderate force as shall not give additional pain, and shall appear to excite the natural dilatation as much as to produce mechanical opening. By doing this for several pains in succession, or occasionally during a pain, at intervals, according to the effect produced and the disposition to yield, we shall soon have the os uteri completely dilated. This is an old principle, but it was rashly practised, and too universally

adopted, which made it meet with just reprobation, and some, knowing this, may be surprised at meeting with such an advice in modern times. Let not the principle suffer from its abuse, else where is the plan which could stand its ground? It is perfectly clear, that when the process is going on well, interference is improper, but it is no less evident, that if a long time is to be spent in accomplishing the first stage of labour, or dilatation of the os uteri, the vigour of the uterus and strength of the patient may be impaired so much as to render the subsequent stage dangerously tedious, or to prevent its completion, at least consistently with safety; the first stage of labour ought always to be accomplished within a certain time, varying somewhat according to the constitution of the patient and the degree of pain. It is an undeniable proposition, that there is in every case a period beyond which it cannot be protracted without exhaustion; and it is no less certain, that if we wish to avoid this exhaustion, which may be followed by pernicious effects, we have only the choice of either suspending the action altogether for a time, or of endeavouring to render it more efficient, and of effecting the desired object within a safe period. The first is sometimes adopted, but is not always practicable, nor is it always prudent to counteract uterine action by strong opiates. The second is safer, and one of the means of doing so is that under consideration. If the pain be continuing without suspension, or an interval of some hours, and the labour be going on all the time, but slowly, it is a good general rule to effect the dilatation of the os uteri within ten or twelve hours, at the farthest, from the commencement of regular labour. This is done, if the os uteri be flat and applied to the head, by the method above described. If it be somewhat projected, it is aided by introducing two fingers, and extending them laterally with gentleness, during a pain. The dilatation is easily and safely effected, if the case be proper for it; if not, bleeding or an opiate, if the former be not indicated, will soon bring about a favourable state. Of the benefit and perfect safety of this practice I can speak positively, and am happy to strengthen my position by the authority of Dr. Hamilton, who makes it a rule to have the first stage of labour finished within a given time. I need scarcely, however, add that,

in enforcing this rule of conduct, it should be recollected that, to render it proper, the pains must be continuing so often and so decidedly, that the patient can be said to be in actual labour all the time. There are many cases where pains, at first regular, have gone off for many hours, or where they have come occasionally in a dull slight way, for a couple of days, but they have given little inconvenience, have scarcely interrupted sleep, and had little effect on the os uteri. They are more of the nature of false pains: the patient can hardly be said to be in labour, and is in no respect fatigued. If interference be proper in such cases, it is by other means, by opiates, by enemata, or remedies and applications evidently pointed out by the nature of the pains which have formerly been considered.

If, again, in lingering labour, the membranes be entire, the os uteri soft, lax, and considerably dilated, and the presentation natural, it is allowable and beneficial to rupture the membranes; and this is more especially proper, if the uterus be unusually distended. The evacuation of the water is succeeded by more powerful action, a circumstance which, whilst it points out the advantage of the practice in the case under consideration, forbids its employment in natural labour, where the process is going on with a regularity and expedition, consistent with the views of nature, and the safety of the woman.

I have also already pointed out the injurious effects which frequently follow premature evacuation of the water; but under the circumstances at present enumerated, the rupture of the membranes is beneficial. Taking away, at a favourable time, the resistance afforded, tends to excite efficiently the action of the uterus, and promotes labour. If the os uteri be lax, and especially if its edges be thin and soft, and the orifice considerably dilated, the same effects may be produced on it by this practice, that would be in cases of greater rigidity by venesection; for both excite labour by diminishing resistance. The more that the os uteri is dilated beyond the size of half-a-crown, the more beneficial, *ceteris paribus*, will the practice be: on the other hand, when the os uteri is firm and little dilated, and the other soft parts rigid, this practice, so far from being useful, is hurtful and dangerous.

An erect posture is another mean which operates in part on the same principle, for it calls in the aid of gravity, adding the pressure of the child to the action of the uterus. The water is allowed to run freely out, and the continued application of the presentation to the dilating os uteri, excites action. The child must be more easily propelled, surely, if it be in such a situation as to allow it to fall out by its own weight, were it not prevented by the soft parts, than if it rested on a horizontal surface and required to be moved along that, by muscular effort, as is the case in a recumbent posture. The difference of facility, then, becomes truly a stimulus. Besides, the muscular motion, or walking, which is employed in an erect position, does good, either by exciting the womb directly, or by removing sympathetic pains in the muscles.

Sometimes, after the first stage is advanced, and the os uteri is nearly dilated, the second does not commence for some hours; but the first kind of pains continue in different degrees of severity without producing any perceptible effect. If no particular cause require our interference, it is best to trust to time; but, if there be no change soon, labour may be accelerated by rupturing the membranes, or, if they have already broken, we may place two fingers on the margin of the os uteri, which is next the pubis, and gently assist it, during the pains, to slip over the head.

When a woman is greatly reduced in strength, previous to labour, that process is looked forward to with apprehension. It is, however, often very easy. But, if it should be protracted, the patient is to be kept from every exertion. The general plan of treatment pointed out for such cases is to be followed, and, if the strength fail, the child must be delivered. We must be particularly careful that hemorrhage do not take place after delivery, or that it be promptly stopped.

If the head rest long on the perineum in tedious labour, the pains having little effect in protruding it, especially if the first stage have been lingering, it comes to be a question, whether we shall deliver the woman. This case is different from that where the difficulty proceeds from a contracted pelvis, for the head is low down, the bones are not squeezed nor misshapen, there is only a swelling of the scalp, the finger can be passed round the head, and

two or three strong pains might expel it. The propriety of employing the forceps in such cases, will fall soon to be considered.

An inefficient state of uterine action may be produced, by some other part acting too much, or being in a state of irritation; and so long as that continues, the womb cannot be expected to contract briskly. We ascertain this by examining the sensations and state of the patient. If the stomach be irritated, she is sick and oppressed, and probably desponding, and sometimes, almost at every pain, has an inclination to vomit. The treatment must depend somewhat on a knowledge of the habitudes of the patient, with regard to certain medicines. If opium agree with her, a moderate dose alone, or with some aromatic, is useful; a little spirit of lavender, or a glassful of hot water, or a little hartshorn, may be employed, or the epigastric region rubbed with some stimulant embrocation. Vomiting, without distressing sickness, and not dependant on exhaustion, but occurring early in labour, often excites rather than retards the action. In other cases, the bowels suffer, and, in these, twenty drops of laudanum generally give relief. A distended bladder also is a cause of protracted labour. In other cases, the muscles of the back or belly become painfully affected, producing what Daventer called "wild and wandering pains," or that state in which the pains no sooner seem to come on than they "are changed into a colic, or a cramp, and an impotency of labour." In such cases he forbade forcing medicines, and advised anodynes. This advice is a good one; and, in all these cases, twenty-five drops of laudanum will be useful, at the same time that the pained part be rubbed with the hand, or an embrocation. In cases of muscular pain, walking or change of posture often gives relief; when there is no particular organ or part affected, but only a general irritation, attended with teazing inefficient pains, the same remedy is often of service, and the energy is directed presently to the uterus. In all those kinds of cases, it is also useful, in general, to endeavour to excite the uterus itself by a warm saline enema, or by some of the other means already or still to be mentioned, or by rubbing the uterine region itself. This has been particularly recommended by Mr. Power, who has insisted more than any other writer on metastasis of action, and on the utility of

this remedy, in exciting uterine action. He employs it by drawing the fingers and thumb rapidly together over the uterus so as to make a brisk friction on the part. That general agitation of the muscular system known under the name of rigor, which often attends the first stage of labour, if carried too far, or continued too long, may also retard delivery, but, in general, it goes off spontaneously, and the action concentrates more powerfully in the uterus. Hence, it is a practical remark, that these rigors often are followed by a brisk labour. This effect, and consequently the propriety of interfering, must depend on their prolongation, and on their influence in carrying off the uterine pain. When we require to interpose, the practice is similar to that recommended above for allaying general irritation.

In tedious labour, it is not necessary to confine the woman to bed, or to one posture; she may be allowed to sit, lie, or walk, as she feels inclined; and we are not to urge her to stand long, or use exertion by way of promoting labour. She has generally not much inclination for food, but, if the process be protracted, it is useful to give some light soup, and a little wine, if she desire it. If the urine be not regularly passed in tedious labour, the catheter ought to be introduced. It is not necessary that the practitioner remain constantly with the patient. It will have a better effect upon her, if he see her at proper intervals; whilst he is thus prevented himself from being so fatigued, as he otherwise would be, and is therefore better able to discharge his duty with firmness and judgment.

The second general cause of tedious labour is irregular action of the uterine fibres. After the child is born, the uterus sometimes contracts like a sand-glass, and retains the placenta. The same spasmodic action may occur before the child be expelled. Many causes, and some of them obscure, may excite the spasmodic action: it is apt to take place when the membranes have given way prematurely, and before the os uteri be in a relaxed state, or have begun to dilate. Improper irritation of the os uteri often excites it, especially attempts to dilate it in absence of a pain, or hurriedly during one. Letting out the water, when the uterus is not contracting, and where there is no pain at the time,

may also cause it, probably by allowing the lower part of the uterus to collapse suddenly around the head or presentation. Preternatural distension of the womb may also produce it, even previous to the discharge of the water. Irritation of the bowels, and mental anxiety may also be viewed as causes of spasmodic action. It is marked by pain coming or increasing at intervals, like proper pains, but it is confined to the belly, and has little effect on the os uteri, or in forcing down the child, nay the os uteri sometimes seems even to contract during a pain. The pain does not go entirely off as in natural labour; but the patient complains of constant uneasiness in the back, or some part of the belly, but generally in the former. The contraction does not go off with the pain, it only lessens; hence the band of fibres still compresses the child, or ovum, and, if the membranes have not broken, they are often kept so tense, as at first to resemble a part of the child, and may mislead the practitioner with respect to the presentation. There is often a frequent desire to void urine, and the spirits are generally depressed. If this affection be slight, it may soon go off; but, if the spasm be strong, it sometimes continues for many hours. A smart clyster is often of great service. Blood-letting sometimes does good, but I prefer opening the membranes if the presentation be good, and the os uteri lax; this I have found very successful.

If, on the contrary, the os uteri be rigid or undilated, and especially if the presentation be not determined, they must be kept entire, until the os uteri will permit of turning, should the position of the child require it. In such cases, and even when the state of the os uteri has warranted the rupture of the membranes, but the expected benefit has not accrued, we may derive advantage from giving a large dose of opium; for in this spasm, like tetanus, opium may be given safely in prodigious doses. Even ten grains have been given, but in general four are sufficient; or an anodyne clyster may be employed. After the child is born, the hand should be introduced into the uterus, not to extract the placenta quickly, but to come easily in contact with it, and excite the uterus to regular action; for generally the spasm returns, and the placenta may be long retained, or hemorrhage produced.

A frequent cause of tedious labour, is a state of over-action or unproductive action in the first stage, by which the powers of the uterus are exhausted, and the subsequent process is rendered very slow. This exhaustion may also be produced by the continuance of debilitated action, or feeble and useless pains. In the first case, the pains are sharp and frequent, but do not dilate the os uteri properly, nor advance the process in general. It may be produced by irregular action of the fibres, or by premature rupture of the membranes. In the second case, the pains are lingering, short, and usually weak. I have already considered the remedies for these states; blood-letting, clysters, gentle dilatation of the os uteri, &c. and have here only to observe, that the exhaustion of the uterus, and consequently an additional prolongation of the labour, is to be prevented, either by suspending the pains for a time, or by rendering them more effective;*(x)* and upon this subject, I refer to what I have already said in the beginning of this chapter. Unproductive action ought never to be allowed to continue so long as materially to impair the action of the womb. If we cannot safely render the action more efficient, we must endeavour to suspend it; by which the womb recruits, and the retarding cause may in the mean time be removed, or cease to exist.

Another cause of tedious labour is the accession of fever, with or without local inflammation. Fever is recognised by its usual symptoms, and may be produced by the injudicious use of stimulants, heated rooms, irritation of the parts, &c. It is to be allayed by opening the bowels, keeping the patient cool in bed, and giving some saline julap; at the same time that the mind is to be tranquillized. If these means do not immediately abate the heat, frequency of pulse, &c. and render the pains more effective, it will generally be proper to detract blood, especially if the head or chest be pained. When local inflammation accompanies fever, it is commonly of the pleura, or peritoneum, or vagina. The first is discovered by pain in the thorax, cough, and dyspnœa; the second by pain in the belly, gradually increasing and becoming constant;

(x) Which may frequently be safely done by the judicious use of the ergot, or spurred rye,

pressure increases it, and in some time the patient cannot lie down, but breathes with difficulty, or is greatly oppressed, and vomits. The labour pains are sometimes suspended; on other occasions, they do ultimately expel the fœtus, but the woman dies in a few hours. On the first appearance of these symptoms, blood should be freely detracted, the bowels opened, and a gentle perspiration excited. In all these cases of inflammation, if immediate relief be not obtained, the child must be delivered by the forceps. If the vagina be hot and dry, we are also to deliver immediately, as these symptoms indicate danger from inflammation.*

Labour may also be rendered tedious, by the different stages not going on regularly, but efforts being prematurely made to bear down. In consequence of these, the uterus descends in the pelvis before the os uteri is dilated, and the process is often both painful and protracted. In some cases, the womb prolapses, so that its mouth appears at the orifice of the vagina. This prolapsus may take place during pregnancy, or after parturition begins. It is often met with, in a slight degree, whilst the os uteri is not greatly dilated, and uniformly injures the labour. We are to prevent it from increasing, by supporting the head or the uterus with two fingers, during the continuance of a pain; at the same time that the woman avoids, as much as possible, every bearing-down effort, and remains in a recumbent posture. If the os uteri be slow of dilating, some blood should be taken away, and an opiate administered, or the os uteri gently but completely dilated, during successive pains. It has happened that, by neglecting these precautions, the uterus has protruded beyond the external parts. In this case, no time is to be lost in attempting the reduction, which will be rendered easier

* It is observed, generally, that women in labour bear well the loss of blood. Bleeding, undoubtedly, when used judiciously, facilitates the expulsion of the child, and secures a more speedy recovery, or "*getting up*." It moreover obviates the train of unpleasant consequences to which women are liable from the tendency in their systems to inflammation at the time. As a remedy to suspend uterine action with a view of turning the child, bleeding is never to be neglected, provided the woman is not exhausted. But when it does not produce that effect, which will often happen, then opium in a large dose may be resorted to with advantage. It is correct practice, however, in most cases to let bleeding precede the anodyne. C.

by cautiously pulling back the perineum.* If this cannot be done, the os uteri, if lax and yielding, must be gently further dilated, the membranes ruptured, the child turned, and the uterus replaced.† The os uteri has been cut,‡ but this can never be necessary if the structure of that part be natural. When the womb does not actually protrude, the vagina may be inverted like a prolapsus ani. A soft cloth, dipped in oil, should be placed on the part, and pressure made with the hand. Giesman cut the inverted vagina on a probe, but this operation can rarely be required. If the womb prolapse before labour, as happened to Rœderer's patient, we must manage the case as a simple prolapsus. She had severe pains, although she was not in labour.

ORDER 2. FROM SOME MECHANICAL IMPEDIMENT.

There exists, naturally, such a proportion between the size of the head and the capacity of the pelvis, that the one can pass easily through the other. But this proportion may be destroyed, either by the head being larger or more completely ossified, or the pelvis smaller than usual. In such cases, which are to be discovered by careful examination, it is evident that the labour must be more tedious, and more painful, than it otherwise would be. The first stage of the process is generally, but not always slow; the second is uniformly so; the head is long of descending into the pelvis, it rests long on the perineum, the pains are frequent, severe, and often at last very forcing, but the woman says they are doing no good. Now this state requires both patience and discretion. The bowels should be opened with a laxative; the urine regularly expelled; the strength preserved by quietness, avoiding unnecessary exertion, indulging any disposition to sleep which may exist, and taking a little light nourishment occasionally; the mind is to be soothed, and the hopes supported. The rule formerly laid down, with regard to effecting the dilatation of the os uteri, or accomplishing the

* Vide Mem. of Med. Soc. Vol. I. p. 213.

† Vide Portal's 10th Obs.; and Ducreux's case, in Mem. de l'Acad. de Chir. Tome III. p. 368. See also a case by Saxtorph.

‡ Vide case by Dr. Archer, New York Med. Rep. Vol. I. p. 323.

first stage of labour within a certain period, is to be attended to, by which the energy of the uterus is saved, and it is enabled to go through the second stage more readily and safely. If the pains begin to slacken, whilst the strength remains good, an opiate may be given, to procure some rest. How long the case may be trusted to nature, must depend on the strength of the patient, and the degree of suffering; but, assuredly, we are not at liberty to carry the trial to a great extent. The consideration of this question, however, must be reserved for the next chapter.

Malposition of the head may likewise retard the labour; but this has already been considered. Much suffering may be avoided by attending to this cause, as the position is often rectified by pressure with the finger alone.

Another cause of tedious labour is, rigidity of the soft parts, which may be dependent on advancement in life, or some local peculiarity; and these causes generally act more powerfully in a first than a subsequent labour. This rigidity may exist in the os uteri, in the external parts, or in both; and if, along with this, there be premature rupture of the membranes, the difficulty is always increased. When it exists in the os uteri, that part is very long of dilating; the effect of the pains, for a long time, is rather to soften than to dilate; and after the woman has been many hours in labour, it is found, when the pain goes off, to be collapsed, and projecting like the os uteri in the eighth month of pregnancy. In this case, the first stage is very slow, lasting, if we do not interfere, sometimes two or three days; and the second is likewise tedious. The whole process takes up, perhaps, three days or more. When the rigidity exists chiefly or partly in the external parts, they are found to be at first dry, tight, and firm. By degrees, they become moister and more relaxed; but they may still be so unyielding, as to keep the head for many hours resting on the perineum. Some methods have been proposed for abating the rigidity; such as baths, fomentations, and oily applications; or digitalis and sickening medicines given internally; but these have no good effects, and some of them do harm.* Blood-letting is the best remedy in such cases.

* These remedies are mostly inefficient or injurious. The *warm bath* is productive of no advantage, and is apt to detach the placenta, occasioning thereby

Dr. Rush informs me, that in America it has been used with great advantage; and Dr. Dewees has politely sent me a dissertation on this subject, which contains very good cases of its efficacy, when pushed freely. In some instances, fifty ounces were taken before the parts relaxed. In determining on the use of blood-letting, we must attend to the state and habit of the patient. Debilitated women,* and those who are exhausted by fatigue, especially among the lower classes in large cities, are injured rather than benefitted by this practice. Robust women, of a rigid fibre, in the middle class of society, or who live in the country, bear blood-letting better, and derive more benefit from it. In them it is especially proper, if any degree of fever attend the labour, and in whatever part the rigidity exists, if the patient be not previously reduced, or very delicate, blood should be detracted *pro viribus*. If, however, the state of the patient forbid this, then an opiate clyster is the appropriate remedy.

The direction already given, respecting the completion of the first stage of labour within a reasonable time, must be attended to, and is always practicable when the means of relaxation have been employed. When the head descends to the perineum, it is of service to keep the patient for some time in an erect or kneeling posture. We must not allow either the general or the uterine vigour to be too much diminished, but must finish the labour by the forceps, before any considerable exhaustion takes place.

dangerous hemorrhages. But I confess, my objections to it arise rather from what I have learnt of others in whom I can confide, than from my own experience, having rarely seen the bath employed. *Nauseating medicines*, of different kinds, I have tried, but with no good effect. Where the external organs are rigid, and dry, and swelled, local *fomentations*, and *oily applications*, may, perhaps, be of some service.

Blood-letting, if regulated by a sound discretion, is undoubtedly *the remedy* in these cases. It may often be pushed to a considerable extent. I have drawn as much as fifty ounces of blood in the course of a day, or night, where the os tincæ obstinately refused to yield. In rigidity of the vagina, owing either to natural or acquired causes, and in tumefaction of the external parts, attended with soreness to the touch, it is equally useful. C.

* Dr. Dewees bleeds even delicate women, and those who are disposed to faint on being bled, but takes a smaller quantity from them.

In some cases, the os uteri or external parts, instead of being rigid, are tumid, and apparently œdematous.(y) In these, the labour is often protracted for several hours, especially when the os uteri is affected. In tedious labour, the os uteri sometimes becomes swelled, as if blood were effused into its interstices. This requires venesection, and then a smart clyster.

The os uteri may be naturally very small. In some instances, it has, with difficulty, admitted a sewing needle; and in two cases, during labour, I found it almost impervious, hard, circular, and with difficulty discovered; but it gradually dilated. Venesection is, in this state, of service. Sometimes it is hard and scirrhous, so that it has been deemed necessary to make an incision into the os uteri, to make it dilate.* It is also possible for the os uteri to be

(y) A case of this kind occurred not long since to the Editor, where, in consequence of the great tumefaction of the labia and parts in the vicinity, it became necessary to have recourse to punctures, to prevent the bursting or laceration of the immensely distended integuments. The tumefaction was so great, that the patient could only lay on her back, with her knees drawn up, and her thighs supported by pillows—the canal of the vagina was so lessened by pressure from the effusion in the surrounding parts, that the examination to discover the state of the labour, was made with considerable difficulty. After the punctures in the labia (which jointly appeared to be as large as a child's head,) were made, the fluid continued oozing out for several hours, and it was supposed by a judicious assistant, that nearly three pints of water had been evacuated. The labia ultimately were completely reduced, and indeed became flaccid, and the labour then progressed, and was accomplished without any great difficulty, but the child was dead.

* A case of this kind occurred to Dr. Simson of St. Andrews, and another to a practitioner in America. Dubosc mentions a woman 40 years of age, who had convulsions for two days, during labour, from this cause. The face was pale and the extremities cold. The orifice was very rigid, and little dilated. He cut it and she was delivered of a dead child. Gautier mentions a case where, after labour had continued 15 hours, no os uteri could be found. The uterus had descended considerably in the pelvis, and there was no reason to suppose the os uteri was high from obliquity; an incision was made, and the child extracted by the forceps. In 6 weeks the patient menstruated, and when examined after that, the uterus was found in an adherent state of antiversion. Other cases are to be met with in the Dict. des Sciences Medic. Art. Hysterotomie.

closed in consequence of inflammation, so that it has been necessary to make an artificial opening.*

Contraction and cicatrices in the vagina, likewise retard labour, and cause very great pain, until they either relax or are torn, but it is seldom necessary to perform any operation. If it should, they must be cut.

Excrescences proceeding from the os uteri, an enlarged ovarium remaining in the pelvis, or tumours(z) attached to the ligaments, or a stone in the bladder, may all obviously retard the labour, some of them so much as to require instruments. A stone in the bladder ought either to be pushed up beyond the head, or extracted.

A small vagina may require a long time to be dilated.

A great degree of obliquity of the uterus protracts labour. The os uteri may be turned very much to one side, but oftener it is di-

* Vide case by Campardon; in Recueil Period. Tom. XII. p. 227. Moscati gives a case where, in consequence of injury by the forceps, the os uteri was so small that it would not admit a probe. A number of incisions were made round it, after which it dilated. In the next pregnancy slighter incisions sufficed, and in the last none were required. Aubertin performed, in a case of the kind, the cæsarean operation. In a subsequent pregnancy, in the 7th month, the cicatrix was ruptured, and, by very little enlargement, a child was successfully extracted. In a case given by Gautier, the os uteri was obliterated after a labour in which the shoulder presented. The menses were retained, and required a perforation for their evacuation.

(z) Two very interesting papers on tumours within the pelvis, obstructing parturition, have been published of latter years; the first by H. Parke, esq. of Liverpool, in the 2d Vol. of the Medico-chirurgical Transactions, and also in the Eclectic Repertory, Vol. IV. The next and the most important memoir is by Dr. Merriman, in the Medico-chirurgical Transactions, Vol. X.

It would appear from the cases related or referred to in these papers, that Embryulcia and the Crochet can be rarely necessary in such instances.

From the evidence we at present possess, as has been observed by Mr. Parke and Dr. Merriman, the most eligible practice would generally appear to be, to puncture the tumour, or to make an incision into it, which gives both the mother and child the best chance of existence. In the case related by Professor Francis, in a note to his valuable edition of Denman's Introduction, it nevertheless appeared to be necessary, after puncturing and breaking down the tumour, to deliver by the crotchet. The woman recovered, and again became pregnant.

rected backwards and upwards, and may be out of the reach of the finger. Time rectifies this, but much time and pain may be spared, by gently pressing the os uteri forward with the finger. Daventer, who was both a candid and an experienced man, has perhaps made the moderns too inattentive to obliquity of the womb, by going to the opposite extreme.

Retroversion of the uterus may likewise prove a cause of tedious labour, and can only be remedied by cautiously attempting to press down the os uteri from above the pubis.

Malformation of the organs of generation may afford great obstacles to the passage of the child, so that even an incision may be required, as happened in the case related by Mr. Bonnet, in the thirty-third volume of the Philosophical Transactions.

By shortness of the umbilical cord, or still more frequently, by the cord being twisted round the neck, the labour may be retarded, particularly the latter end of the second stage. The cord may be on the stretch, but it never happens that it is torn, and very seldom that the placenta is detached. We have no certain sign of the existence of this situation; but there is presumptive evidence of it, when the head is drawn up again upon the recession of each pain.*(a)* It often remains long in a position, which we would expect to be capable of very quick delivery. By patience, the labour will be safely terminated; but it may often be accelerated, by keeping the person for some time in an erect posture, on her knees. After the head is born, it is usual to bring the cord over the child's head, so as to set it at liberty; and this is very proper when it can easily be done, as it prevents the neck from being compressed with the cord in the delivery of the child, by which the respiration, if it had begun, would be checked, or the circulation in the cord be obstructed. Some have advised that the cord should be divided, after applying the double ligature; but

(*a*) This retraction of the head during the recession of a pain, is more frequently owing to the rigidity of re-action of the external parts; and may often be obviated if necessary, by venesection. We believe it is rarely owing to the cause here assigned for it by our author.

this is rarely necessary, for the child may be born, even although the cord remain about the neck.(*b*)

Preternatural strength of the membranes may also to a certainty prove a cause of tedious labour. This is at once obviated, by tearing them, which is done by laying hold of them when slack, during the remission of the pains. It sometimes requires a considerable effort to rupture them.

CHAP. VI.

Of Instrumental Labour.

ORDER 1. CASES ADMITTING THE APPLICATION OF THE FORCEPS OR LEVER.

Various causes may render it necessary to accelerate delivery, such as, spitting of blood, convulsions, uterine hemorrhage, emphysema, the existence of aneurism, &c. These are, however, to be considered as in some respects adventitious; and, at present, I mean to confine myself, to an account of those, which are more immediately connected with the power of expulsion.

It must be very evident, that if the head of the child be unusually large, or the capacity of the pelvis be diminished, a mechanical obstacle must arise to the delivery of the child. Of these two states the last is by far the most frequent, and constitutes one prominent cause of instrumental labour. I have already explained, the effect of resistance in checking the free and brisk action of the uterus, until, at last, the muscular power is more roused, and strong efforts made. These circumstances require to be maturely consi-

(*b*) In some cases where it has been found impracticable, without great danger of rupturing the cord, to bring it over the head of the child, it has answered to pass it over the shoulders of the infant, and thus suffer it to be born through the noose of the cord.

dered, for, in such cases, the first stage of labour is very frequently, although not invariably, slow; and if not accelerated by proper management, the action of the uterus is apt to become exhausted, and its vigour prove inadequate to the safe accomplishment of the second stage. Different effects must be produced by the resistance, according to its degree, the constitution of the patient, and concomitant circumstances. A slight opposition may operate, chiefly by impeding or rendering irregular and inefficient the action of the uterus, and the consequences may vary much in different labours, and under different treatment. A greater degree of resistance must invariably produce, from the obstacle afforded, a protracted and severe labour; and, in particular, we apprehend the occurrence of two different conditions which are very often conjoined. First, The head, by the gradual and severe efforts of the uterus, and abdominal muscles, is pressed more or less into the pelvis, and becomes impacted there, so that it cannot, by the power of nature, be forced lower, and can even with difficulty, in many cases, be raised in any degree upward by the accoucheur. This is known technically under the name of the locked head, or case of impaction. It is evident, that in this state delivery is next to hopeless, for all farther efforts are generally unavailing. Secondly, The continued pressure of the head on the soft parts, is productive of farther diminution of the capacity of the pelvis, for inflammation is excited, and, at the same time, the return of blood by the veins is obstructed, and of serum by the lymphatics. This impairs the power of the soft parts, and renders the inflammation of the low kind, so that, even when delivery is accomplished, sloughing succeeds, whereby very dreadful or loathsome effects are produced, if these, indeed, be not prevented by the death of the patient, in consequence of a similar low inflammation being communicated to the uterus or peritoneum. This swelling of the parts contained within the pelvis may take place, although the head be not impacted, but the head cannot be long impacted without producing that. Here, then, is one effect of a most formidable and alarming nature, which we apprehend in the case under consideration. But this is not the whole of the evil; for the upper part of the vagina or the cervix uteri, may be lacerated in consequence of this debilitated state, or any

part of the uterus may be ruptured by strong or spasmodic action; or uterine or peritoneal inflammation may be excited previous to delivery, proving fatal in a few hours after labour is terminated; or hemorrhage may occur to a fatal degree from want of energy in the uterus after delivery; or general irritation and exhaustion are produced, the pulse becomes frequent and at last feeble, the mouth parched, the skin hot, the mind confused and the strength sunk; or the powers of life may be worn out, so that the patient shall die without any decided inflammation, or disease referrible to a common nosological system. Such may, and must, in general, be the result, if assistance be long withheld, or if the patient, from unusual strength, or some fortunate yielding of the cranial bones, be able at last to bring forth her child. When we turn from the mother to the fœtus, we find that this continued pressure alters the shape of the head, and affects the action of the brain, or the important function of circulation: first, the scalp tumifies, and we think the head is descending, when in reality it is stationary, and the integument is only becoming raised; then, the bones are squeezed closer together, and the presenting part of the cranium forms an angle, more or less acute, which has been compared to a sow's back. In some instances, the two parietal protuberances are not more than two inches and a half distant from one another, but the head is not always lengthened in the same proportion; on the contrary, in a few cases, it is even shortened, from one bone sliding under another. Children have been brought to me, where the bones have been separated, and the one parietal bone forced completely beneath the other. Last of all, partly from pressure on the brain, but independently of that, from continued pressure on the cord or organs of circulation, the child perishes; and whether born by the natural efforts, or delivered by art, is dead. Such, then, are the effects, to parent and child, of a locked head; effects which can only be avoided by accelerating the progress of labour, and calling in the aid of extraneous force.

When we talk of a case of impaction, we must not, however, suppose that the head is literally and entirely immoveable. That it is, in the strict sense of the word, sometimes impacted, and cannot be moved, is no doubt true; but more frequently the hand can

make it recede a little, although the uterus cannot make it advance any more. Levret took the word in its strictest meaning, and imagined that the head was jammed between two points of the pelvis. Rœderer went farther, and maintained that every part of the head was so fixed and pressed on, that not even a needle could be passed any where between it and the pelvis. If so, how can the forceps be applied? If the head be jammed at every point, even making allowance for the elasticity of its bones, we could not introduce the finger between it and the pelvis, or reach the ear. We can be at no loss to ascertain the existence of this state. The slow progress of the labour, the severity of the pains, the tardy descent of the head, its gradual impaction, or increasing immobility, its alteration of shape, the deformity or diminished capacity of the pelvis, the progressive tumefaction of the vagina, the stationary condition of the head;—all point it out, too clearly to be mistaken; and many of these symptoms, together with those of general irritation and exhaustion, increase with the period to which labour is allowed to extend. This state may be anticipated, when the pelvis is ascertained to be deformed. We know that if the pelvis measure, in its diameter, only three inches and a half, then we must have a painful and difficult labour, because, as the head measures as much in its lateral extent, it must be compressed more or less in order to pass. If the brim, however, measure somewhat less, the head of a child, at the full time, cannot pass, until it have been pressed so long as to diminish its breadth, perhaps half an inch.* The more, then, that the brim is reduced below its natural dimensions, the longer and more painful must the labour be, until we come to such a degree of contraction, as will either render expulsion altogether impossible, or delay it until great danger have been induced.

It is difficult to draw the line of distinction betwixt that degree of contraction which will render it impossible for delivery to take

* The head can bear much more pressure before the child is born, than after it has breathed. Respiration is more under the influence of the brain, than the action of the heart is; and the action of the latter, after birth, ceases when the brain is injured or compressed, not so much because it is directly affected, as because respiration, with which it is associated, ceases.

place naturally, and that which will only render it extremely difficult. It has been proposed to ascertain this, by a rule founded on the dimensions of the pelvis. But this method cannot be brought to a sufficient degree of perfection, for the result of cases is much influenced by the size of the child, the pliability of its head, the vigour of the uterus, and other causes. Besides, it is difficult, if not impossible, to determine, with minute precision, the dimensions of the pelvis in the living subject; and they are apt to vary, according as the soft parts within the pelvis, are more or less swelled.

There is another case of protracted labour requiring instrumental aid, when the head is not impacted; the pelvis may even be of ample size. It is known under the name of the case of arrest, or by the French writers *la tête arretée au passage.* The head is not fixed or jammed, the finger can more readily be passed round it, the scalp may be swelled, but the bones are never misshapen, and the retardation appears to arise rather from the nature of the pains, or the unyielding state of the soft parts at the outlet of the pelvis, than from any actual obstruction offered by the pelvis to the delivery. It is a mere case of tedious labour, but a case protracted to the utmost limits of prudence, in spite of the employment of those means which have been pointed out in the last chapter. It may arise from some slight disproportion between the size of the head, and the capacity of the pelvis, or more frequently from variations and irregularities of the uterine action, which have already been fully considered, and it is much more frequent in its occurrence than the locked head. The case of impaction is clearly marked by the symptoms formerly detailed: that of arrest is ascertained by the simple condition of the head being stationary, but not jammed in the pelvis. There are many cases, then, of arrest which are safely terminated by nature, and which are placed under the class of tedious labour; but there are many others, where it becomes prudent to accelerate delivery by artificial force, and the question for deliberation is, at what period we shall thus interfere, or when further delay is hazardous?

I have fully, and I hope practically, detailed and considered the causes which render labour tedious, and have pointed out the impropriety of permitting the first stage to be protracted, for thereby

the uterus becomes enfeebled, and less able to accomplish the second. But when this advice has not been acted on, or when the treatment proper for the particular cases already described, has not been successful in effecting delivery, what is the consequence ultimately of delay? The uterus, by continued, but inefficient action, or unavailing contraction, becomes gradually debilitated; and when at last delivery is effected, it cannot contract with vigour and regularity, whereby hemorrhage is occasioned, or the same event is produced by spasmodic action of the uterus. Here then, is one very serious evil which may be anticipated. Next, there is a strong disposition given to puerperal disease, not merely to those troublesome, though less dangerous complaints, known under the name of weeds, or irregular febrile paroxysms; but also to more formidable affections, of an inflammatory nature, especially of the womb or peritoneum. Accordingly, we find that a much larger proportion of women die after protracted, than after natural, labour. Here, then, is another class of evils to be apprehended. Again, although the same local mischief is not so apt to take place, that we meet with in locked head; yet, the patient is not exempted from risk even of that; by continuation of labour, the soft parts at last inflame and swell, which adds not only to the difficulty of delivery, but also greatly to the danger of the case. If it be necessary to enumerate other hazards, I may set down the consequence of protracted irritation and exertion, marked by the induction of a state of fever, and at last of great exhaustion, insomuch that the patient may actually die undelivered, but this event, as well as rupture of the uterus, is less apt to occur than in locked head. Besides all these hazards to the mother, the child is in danger of perishing, not from compression of the brain, but from the continued pressure of the uterus, after the evacuation of the water, interfering with the regular performance of the function of circulation. These are surely no trivial evils resulting from protracted labour; and the utmost that I feel at liberty to concede in favour of delay, is, that it may be permitted longer in cases of arrest, than of impaction. Many eminent men, have placed an undue confidence in the power of nature, and have been hostile to the use of instruments. For a long time I was influenced by the high authority and plausible arguments, as well

as bold assertions of these practitioners, but experience has compelled me to adopt the opinion, I am now, with a firm and solemn belief of its correctness and importance, to maintain in this chapter. From the strength of the recommendations of the partizans of nature, we should suppose, that whenever the child could actually be born without aid, no hazard occurred, and, on the other hand, that instruments must of necessity prove not only very painful in their application, but dangerous in their effects. Now, the first supposition is notoriously wrong, for innumerable instances are met with, where the mother does bear her child, without artificial aid, and much, doubtless, to the temporary exultation of the practitioner, but nevertheless death takes place, or, at the best, a tedious and bad recovery is the consequence. The second supposition is just as positively unjust; for in the majority of cases, if the practitioner be humane and gentle, the introduction of the instrument gives little or no pain; in so much so, that in many books we meet with strong and just reprehension of the clandestine and unnecessary use of instruments, which could never possibly take place, if their application were attended in such cases with much pain. Then, as to the pain occasioned by extraction, that may be greater than the patient was just before suffering, and yet not be greater than is often experienced in a natural labour; or even granting it to be uniformly greater, a concession I make for the sake of argument, it is but for a short time, and, on the whole, the suffering of the patient is less than if nature had been allowed at length to expel the child. These positions are perfectly correct in all cases of arrest, when the practitioner is well instructed and cautious. Next, as to the danger to be apprehended, I cannot in cases of arrest see any source whence it can arise. The mere introduction of the forceps, if gently accomplished, can scarcely be more hazardous than the introduction of the finger, for no force is, or ought to be exerted. If there be hazard, it must be in the process of extraction, and this, it is evident, can arise only, either from pressure of the instrument on the soft parts, or from the head and instrument lacerating the perineum. The last event, must, in general, be the consequence of want of caution, and the first can never be carried to any dan-

gerous degree in a case of arrest, if the operator know how to direct his efforts.

In such cases, then we may experience much evil, from trusting too long to nature, but add little to the sufferings, even for a short time, of the patient, and nothing to her hazard. When, however, we turn our attention to cases of impaction, the case is different. There is greater difficulty in introducing and fixing accurately the instrument, and doubtless more pain even in this stage is given than in cases of arrest. When again we come to act with it, the suffering or pain must be increased, even in the hands of a gentle operator, in proportion to the resistance to be overcome. The soft parts have already been pressed on during labour by the head, they must still be pressed on to a greater degree; and even if the maxim, that time is equivalent to force, were acted on to a certain extent, it would be vain to deny that there must be both greater suffering and greater danger than in natural labour, or than in cases of arrest. These sufferings, and this danger, must be in a certain degree proportioned to the tenderness which has already taken place in the soft parts, and therefore may be greatly lessened, but cannot be increased by an early application. Their production depends on the obstacle afforded. When the head has arrived at a station rendering the application of the forceps practicable, no good can arise from delay; we only add unprofitably to the suffering in the meantime, or lay the foundation of a state which is to render the later application of the instrument more painful and more hazardous. When mischief arises from the application of the forceps, it always is owing either to harsh and unskilful conduct, or to the state induced by delaying their use too long. If it require strong efforts to extract the child, could that child ever have been born by the power of nature, or could the uterus and abdominal muscles, after long action, retain vigour sufficient to exert a force equal to that which is often required to extract an impacted head. Indeed our best writers, however fond they may have been of delay in cases of arrest, are disposed to deliver whenever the head has been locked. Nothing can be expected from delay except sloughing, and the alternative of speedy death, or a miserable existence.

Holding the opinion I have been laying down, it is not without astonishment and regret, that I find Dr. Osborn stating, that in a case requiring the use of the forceps "all the powers of life are exhausted, all capacity for farther exertion is at an end, and the mind as much depressed as the body, they would at length sink together, under the influence of such continued but unavailing struggles, unless rescued from it by means of art." If such a state be allowed to take place, even in a case of arrest, but more especially of impaction, it is much to be dreaded that the interference of art shall prove as unavailing as the struggles of nature. Were this the opinion only of Dr. Osborn, I should pass it in silence; but unfortunately it is the prevailing doctrine of the day; and the modern disciples of the school of patience, men of talent and observation, carry their fears of the mischief resulting from the use of the forceps to an extravagant length, and place a mistaken confidence in the efficacy and safety of a continued action of the expulsive powers. I have much pleasure, however, in strengthening my opinion with the authority of Dr. Hamilton, the present excellent Professor of Midwifery in Edinburgh, who has long seen the hurtful effect of the temporizing system, and of Dr. Osiander, the active and experienced Professor in Gottingen.*

To place the argument in a yet stronger light, I shall examine the result of delay, as deduced from the tables published by Dr. Breen of the cases occurring in the Dublin Hospital, because these are the latest I have beside me, and were published without reference to any particular opinion.

In the course of 57 years, 78,001 women were delivered, of

* In Dr. Smellie's time, he calculated that the forceps were required once in 125 cases of labour; since then there has been rather a deterioration in practice, so far as delay is concerned, for the more modern calculations are 1 in from 158 to 188. One gentleman, for whom I have great respect, states, that the forceps were not necessary in the hospital practice, above once in 728 cases, and in private practice, above once in 1000.

Dr. Merriman's practice comes nearer the line of safety, for it exhibits 1 in 93. Dr. Naglee has employed them once in about 53 cases, which corresponds very much with my own list. In former editions of this work, I expressed an opinion, which I still adhere to, that of two evils, it is infinitely safer, for the mother, to interfere too soon, than to procrastinate.

whom one out of every 92 died, and one child out of every 18 was stillborn. If, however, we were to exclude cases of tedious labour, and attend to the rest of cases of natural labour, or the consequences of a correct and healthy process of parturition, we would find the proportion of deaths to be altogether trifling: I am willing however to adopt this average. Let us now see the result of tedious labour.

In women, who were in labour of their first child from between 30 to 40 hours, one in 34 died, and one child in 5 was stillborn. Here then is a prodigious difference, between even the average result of all labour, good and bad, and a protracted labour. During the same period of labour, amongst women who had previously borne children, and therefore, if requiring instruments, might be supposed to have a more permanent obstacle or contracted pelvis, though this is not stated, about one in every 11 died, and one child in every 6 was stillborn.

When labour was protracted between 40 and 50 hours, in women who had not previously borne children, one in 13 died, and the proportion of stillborn children was as one in $3\frac{1}{3}$.

If labour were protracted other ten hours, that is, between 50 and 60, one-eleventh of the women died, and when we proceed to the period of between 60 and 70 hours, one-eighth died, and nearly one-half of the children. It is observable, however, that only one-twelfth died in the next ten hours, but this variation must arise from accidental circumstances.

It is impossible to give any comparison of these results, with those afforded in the same hospital by the use of instruments, for artificial aid, it is evident, was always long delayed, unless in cases where dangerous symptoms not essential to labour occurred. Instruments were used, on account of tedious labour, in 44 cases, and of these 18 died.

Now, taking the proportion of deaths in the parturient state, to be, including all disasters whatever, as 1 in 92, it is most important to observe the progressive fatality arising from delay. Suffering above 30 hours destroys one in 34; in other 10 hours the danger more than doubles, for 1 in 13 dies; then 1 in 11, and next 1 in 8, to say nothing of the children.

To deliver a system of rules precisely applicable to every case, is quite impossible, for much must be left to the judgment of the practitioner, who is to be guided by general principles. I can therefore only offer for his consideration, the following observations.

First, It is important in every case of parturition, but more especially if there be reason to anticipate a tedious labour, to prevent the first stage from being protracted. Whenever the uterus is in a state of unsuspended action, that is to say, the pains decidedly parturient, and continuing without long intervals, but producing a slow effect on the os uteri, the means formerly pointed out for effecting its dilatation, within a limited time, generally twelve hours, ought to be resorted to.

Second, Whenever the os uteri is completely dilated, but not sooner, the forceps can be applied, if the case admit of relief by the use of that instrument. But the lower that the head has descended, the easier is the application, with the exception of those instances in which the head is very firmly impacted in the pelvis; for in such it may be necessary to press the head up a little, in order to be able to introduce the blades.

Third, It is ascertained that the head, at the full time, cannot, consistently with safety, bear to have its transverse diameter reduced, by pressure, to less than three inches. Most forceps, therefore, are so constructed, that when joined, the blades at their most curved part which is to contain the parietal bones, cannot come nearer to each other than three inches. The pelvis then must, after making an allowance for the soft parts, measure at least that space in its conjugate diameter, in every case where the forceps is applicable. It would, in a smaller pelvis, be dangerous, always difficult, and often impossible, to introduce the blades, and, when introduced, they never could be brought through it, and indeed could only be locked by being carried above the brim. This fact, then, fixes the limits of that deformity, which permits the application of the forceps. The blades might doubtless be made to approach nearer, and to squeeze the head more, but as the child would perish, it is better to employ another method safer for the mother.

Fourth, The forceps are merely small hands, and therefore, when the finger of the operator can be extended over the side of

the head, one blade can be passed along that side, in whatever part the head is situated. This, it is indisputable, may be done, when very little, or even no part at all, of it has entered the brim of the pelvis. The possibility, however, of applying the corresponding blade, must depend on the dimensions of the conjugate diameter; and, if possible, it would be useless, unless there were space to deliver a living child, or to bring out the locked forceps enclosing the head. We shall presently see that, in this high situation, the forceps cannot be applied without great care and dexterity; and that no small danger attends the attempt.

Fifth, The lower that the head has descended, the more easy and the safer is the use of the instrument. In almost every case where the forceps are beneficial, the head has so far entered the pelvis, as to have the ear corresponding to the inner surface of the pelvis, and the cranial bones touching the perineum. Until this descent has taken place, the common or short forceps cannot be employed; and it is to this instrument that I confine my remarks, leaving the use of the long forceps to be *specially* considered. When the finger, without the introduction of the hand into the vagina, can easily touch the ear, and when the cranium is in contact with, although not protruding the perineum, the forceps are applicable.

Sixth, It has been laid down as a rule, that the head should have rested on the perineum for 6 hours previous to the use of the forceps; but this is quite unsatisfactory, for it may, in many cases, be allowed to rest there longer, and in others, especially when the head is impacted, it would be both unnecessary, and dangerous, to permit it to remain so long. It is confessedly in every instance, allowing the labour, whether with or without propriety, to be continued for six hours after delivery has become practicable.

Seventh, Whenever the pelvis is ascertained to be contracted, we are to take care that the first stage of labour be not prolonged, and the vigour of the uterus diminished. As soon as the head has come within reach of the ordinary or short forceps, unless it be descending farther, and the labour going on briskly, we ought to deliver, and whenever the head becomes impacted, we are warranted, and called on, to interfere. In cases, then, where the pelvis is dis-

proportionate to the head, we do not wait any definite time, and pay no regard to duration, farther than becoming, every hour that labour is prolonged, more solicitous that the head may come within reach of the short, and save the necessity of using the long forceps. The safest rule is, to deliver as early as delivery is easily practicable; but it may even be necessary to interfere before the head has come within reach of the common forceps, and when considerable difficulty attends the application of the instrument. This is the case when the head has partly entered the brim, but has not for some hours yielded farther to the pains; and at the same time its deformity is not so great as absolutely to require the crotchet.

Eighth, Neither are we in cases of arrest, to proceed strictly on a rule founded altogether on time, unless we vary that according to the strength of the constitution, and the actual efforts made by the uterus. We cannot with reference to the present question, consider a patient to have been decidedly 30 or 40 hours in labour, who has had slight pains at first; then a suspension of these for a number of hours, and again, perhaps, a return of trifling pains, with long intervals scarcely affecting the os uteri. These can scarcely be called the pains of labour; and whether they should be checked or let alone, must depend on considerations formerly brought forward. We date our time from the commencement of evident and progressive effects on the os uteri, and are also in part regulated by the state of the pains in the second stage. The patient may have the os uteri fully dilated, and yet the next stage may be suspended for some hours, there may be a pause in the uterine action, occupied in sleep or passed in ease. It is quite different when there has, from the first, been continued uterine action, which has brought the head into the pelvis; but, whether from weak or restrained, or irregular action, has not been efficient for its expulsion. In this case, presuming that the rule has been acted on, of having the first stage accomplished within a certain number of hours of actual labour, that pains producing little or no effect on the uterus or its mouth have been either stopped or rendered efficient, I am inclined to lay it down as a principle, that the second stage should be accomplished within a little longer period

of time, than was allowed for the first. But to prevent all mistake, in a rule which is connected with time, I must again expressly state to the reader, that as I formerly spoke of the first stage being accomplished within a certain period of actual labour, and dated from the commencement not of mere pain, which may not even have been truly uterine, but of pain affecting the os uteri; so the second stage is to be considered also as a state of uterine pain, and is not to have included in its duration, the hours of suspension, which may have been passed in sleep or tranquillity. When I come to lay down a rule as to the time of interference, I would say, and that from reflection and experience, that few cases ought to be trusted to nature for 36 hours, and in general it is safe and proper to interfere within 30. There may be cases where particular symptoms shall justify and call for aid, even within 24 hours, and an impacted head may demand it within that time; but, in an ordinary state of health and strength, a mere case of arrest may be safely trusted till between 24 and 36 hours, and the point of interference in this range of 12 hours, must be regulated by the efforts which have been made, the uninterrupted continuance of labour, the obstinacy of irregular action, the situation of the head, or length of time it has remained in a situation rendering the forceps applicable, and last of all, the general vigour of the patient. Finally, the longer that the first stage has been protracted, and the more painful or severe that it has been, the shorter should we wait in the second, and *vice versa:* this remark, however, is only applicable to cases of arrest, and not of impaction.

The doctrine I have now been supporting, rests on this principle, that it is safer to extract the child with the forceps, than to allow the uterus to remain long in a state of action, whether that be regular or spasmodic, and whether it lead directly to exhaustion, or ultimately to disease arising from irritation. If I have been tedious in my argument, or been betrayed into repetition, I plead that the great importance of the question to society has led me to trespass.

Some patients urge the adoption of any means which can abridge their suffering, and are inclined to submit to delivery in cases where the practitioner can by no means give his consent.

But in general an opposite state of mind prevails, and it is not until after much distress that the patient is reconciled to the use of instruments. The result of a labour is often uncertain: on this account, as well as from motives of humanity, no hint ought, in the early part of the process, to be given of the probability of instruments being required. But as their necessity becomes more apparent, and the time of their application draws nearer, it will be proper to prepare the mind of the relations for what may be necessary, if the delivery be not naturally accomplished. With regard to the patient herself, we must proceed according to her disposition. If she be, from what we have already learned, strongly prepossessed against interference, it will be necessary to give such prudent hints, and such explanations of the practice as relating to others, though not to herself, as will prepare her for her consent. But if we can perceive that she is disposed to agree readily to whatever may be necessary, nothing ought to be said till very near the time, as the anticipation of evil is often as distressing as the enduring of it. When we are to deliver, it is useful to explain shortly and delicately what we mean to do, which has a great effect in calming the mind.

When the child could not be born by the efforts of nature, it was anciently the practice to apply strong forceps, which destroyed the child, or to open the head, and pull it out with a hook. To give the child a chance of living, it was next proposed, and soon became a general practice, to turn the child, and deliver by the feet, as thereby much force could be exerted. If the resistance were great, however, death was invariably the consequence, nay, in many instances, the body was pulled away from the head, which was left in utero. This gave rise to many inventions for the extraction of the head under this circumstance. Fillets or bands of cloth, were also applied over the head, to enable the practitioner to pull it out. These were preferred by Daventer, who informs us at the same time, that single or double hooks might also be employed, and these sometimes even brought out a living child. I have been in possession of these instruments, which consist of two blades, like the forceps, and lock like them. The blades are narrow, and end in a hook which is fixed at the ear.

The danger of this instrument arises from its hook, which in all cases of contracted pelvis, must have sunk through the cranium. In cases of arrest, it might sometimes only go through the integuments, and these are the cases where living children were born.

It is surprising that it did not at once occur to practitioners, that by taking away the hook, this danger might be avoided, and still the head remain fixed between the blades. It only illustrates, what I have often shown in my lectures on surgery, that men come frequently within a single step of a great improvement, without taking that step, and often rest satisfied with imperfect knowledge, and hazardous, if not almost fatal practice, rather than exert the faculties of reflection and investigation. That it is owing to this cause, and not to any superior degree of the inventive faculty, in the man who actually does make the discovery, is evident from this, that no sooner is the fact published, that an improvement has been made, than skilful men discover it, in spite of every endeavour to conceal it. Dr. Chamberlain, in 1672, published a translation of the treatise of Mauriceau, in the preface to which he mentions, that his father, himself, and his brother, possessed a secret by which they could deliver women, without destroying the child, although the pelvis were small. Previous to this publication, however, he had gone over to Paris, in hopes of selling his nostrum; but rashly boasting that he could thereby deliver a woman, whom Mauriceau had declared could not be delivered otherwise than by the cæsarean operation; and failing to effect what he promised, he was obliged to return with empty pockets and little reputation. Next he went to Holland, where he sold at least part of his secret to Roger Roonhuysen, from whom it passed to the celebrated Ruysch, as thorough a quack as any of them; nor was it made public till 1753, when De Vischer and Van de Pole purchased the information, and divulged it. The instrument so revealed, is known under the name of the lever, but it is now ascertained that Chamberlain also employed the forceps. Whether he only sold one half of his secret to Roonhuysen, or whether the latter preferred the lever, or only made others acquainted with it, preserving the forceps to himself, may, like the lithotomy of Raw, be im-

portant in the history of quackery, but is of little consequence to us. Of late, the original instruments of Chamberlain have been discovered, which, it is supposed, he had manufactured himself; one of them is a lever, the other two are forceps; one of which is a little more improved than the other. Soon after this, other practitioners in Britain seem to have devised similar instruments, which they also kept secret, and, perhaps, the first public description is to be found by Mr. Butler, in the Edin. Medical Essays, for 1733. In the same volume, Chapman is severely reprimanded for concealing the instrument, which he gives intimation of in his treatise. This fault he made reparation for in his next edition. Dr. Smellie, in 1752, published his system, containing, amongst other useful instructions, a full account of the mode of using the forceps, the construction of which he improved; and nearly about the same time, Levret, in Paris, performed a similar service to his countrymen. I do not conceive it necessary to detail the various alterations which have been made on the forceps and lever,* but shall proceed to explain the manner of applying and using those instruments.

I have long been of opinion, that, although practice may enable a man to use either the lever or the forceps with dexterity, yet a young practitioner shall be less apt to injure his patient, and less likely to be foiled in his attempt, with the latter, than with the former; and, therefore, I give a decided preference to the forceps. It has been said, that we may operate with the lever earlier than with the forceps, but that can scarcely be the case, if the long for-

* Plates of the different forceps and levers at present in use may be seen in Savigny's engravings; and a very concise account of all the different improvements and alterations of these instruments, from their discovery to the present time, may be found in Mulder's Hist. Liter. et Critica Forcipium et Vectium Obstetricorum. I do not think it necessary to describe the forceps, nor do I consider the slight variations made by different practitioners as of great importance. A particular kind of forceps, with three blades, was employed by Dr. Leak, but it is never used. M. Asalini has altered the forceps somewhat, and I understand, makes the junction at the extremity of the part which is held by the operator, and not at the union of the blade and handle as we do. Some have made one of the handles to screw off, others to fold by a joint, at the commencement of the blade.

ceps be used; and next, it has been maintained, that the lever might be fixed on the head, when both blades of the forceps could not be applied. I have never known such a case, but I am not prepared altogether to refute the assertion, and therefore conceive that the former instrument may, with propriety, be in the possession of every accoucheur.*(c)*

When the lever is to be employed, we are to apply the extremity of the instrument on the mastoid process of the temporal bone,* or side of the occiput. The patient ought to be placed on her left side, in the usual posture; and we then, with the fore finger of the right hand, feel for that ear which is next the pubis, and take it as our guide in passing the lever. Three directions must be particularly attended to. The first is, to keep the point of the instrument, during the introduction and operation, close to the head of the child, lest the bladder or rectum be injured. The second is, that the concavity of the instrument be kept in contact with the curvature of the head, by which it will be much more easily introduced, than if it be separated to an angle from the head. It will, therefore, be necessary to keep the handle back towards the perineum, in the beginning of the process; and it will be useful, especially to the young practitioner, to have more than one lever of different degrees of curvature, for he may sometimes be able to introduce one which is very little bent, when one more concave shall be applied with difficulty. It is a general remark, that within a certain range, the greater the curvature, the more is the difficulty of introducing it, but the greater is its power over the head. The

(o) I am pleased to find that the author has corrected some opinions too favourable to the use of the lever, advanced in the former editions of this work, and which the Editor then controverted; and now repeats his decided recommendation to young practitioners, rarely to make use of the vectis or lever, except to rectify malpositions of the head. He agrees with Dr. Osborn, that the "vectis never ought, because it never can, be used with safety, when the child's "head is not sufficiently low to admit the forceps." For a full view of the question with respect to the comparative advantages of the two instruments, the reader is referred to Dr. Osborn's Essays on the Practice of Midwifery, in natural and difficult labours.

* This process is very indistinct in the fœtus, but the direction may still be retained, as it refers to a well known spot.

third is, to attend to the axis of that part of the pelvis in which the head is placed, and pass the instrument in that course. In the usual position, the blade will be placed behind the symphysis pubis, or perhaps a little obliquely, and the handle will be directed back towards the perineum. As the blade is curved at its extremity, and as, in order to get it passed, its surface must be kept in contact with the head, it will be requisite to direct the handle more or less backward, according as the blade is more or less curved; and when it is introduced, the handle will be brought farther forward.

When we act with the instrument, we must not make any part of the mother a fulcrum; and, indeed, whatever fulcrum be employed, we ought not to raise the handle much, or suddenly, in order to wrench down the head. Instead, at first, of raising the handle considerably, we rather attempt to draw down the head, as Mr. Gifford did with the single blade of his extractor, using the instrument more like a hook or tractor, than a lever. With the left hand placed upon the shank of the blade, we press it firmly against the head, which both prevents it from slipping, whilst we draw down with the right hand grasping the handle, and also serves as a defence to the urethra, should the handle be a little too much raised like a lever. At first, we should pull or act with the instrument gently, to see that it is well fixed, or adapted to the head. Afterwards we act with more force, but not rashly or unsteadily. These attempts will renew the pains if they had gone off, and then they ought only to be made during the continuance of a pain; for every practitioner knows, that the co-operation of pains add prodigiously to the utility of the instrument. The head being brought fully into the pelvis, and the face turned into the hollow of the sacrum, we must act in the direction of the outlet; and for this purpose, it will be useful to withdraw the instrument, and apply it cautiously over the chin, which, as less force is now necessary, will not suffer by the operation. Or the forceps may now successfully be applied, and should be used whenever there is necessity for a speedy delivery. Sometimes the natural pains will, without any further assistance, finish the delivery. We must be careful of the perineum.

The forceps with a single curve,*(d)* may I believe be very safely and early employed; but it is usual to prefer those which have the blades curved laterally also. In this case they must be so introduced, that the convex edge of the blades shall be next the face. It is therefore necessary, to determine which blade shall be placed next the pelvis, before we begin; and this we do by ascertaining to which side the face lies, by examining the position of the ear, as well as the general shape of the presentation. Were the forceps with a single curve employed, it would be a matter of indifference which blade were first inserted.

The instrument is to be gently heated, by placing it in tepid water, and the blade first to be used is to be placed so as to prevent mistake. The bladder being emptied, the patient is now to lie on her left side, in the usual posture, but with the pelvis near the edge of the bed; a female assistant is to go to the opposite side, to allow the patient to hold by her, if she wish it; whilst another may be required to support and hold up the knee and thigh, when the second blade is introducing.

All things being prepared, and the head being supposed to be placed in the same position as in natural labour, the operator gently introduces two fingers between the head and the pelvis, in the same way as he would do in an examination: he feels for the ear,

(d) Such are those which are now generally preferred and employed in this city, under the name of Haighton's Forceps: by increasing the breadth of the blades, and enlarging the fenestra or opening in the blade, which is to be applied over the parietal protuberance, a firmer hold is obtained in consequence of the greater space of the cranium, which is grasped by the instrument. These forceps are also very conveniently portable, which is no trivial advantage, as it regards practitioners in the country.

The following are the dimensions of Haighton's Forceps, as now made by Henry Schively, Surgeon's Instrument-maker, Philadelphia.

	Inches.
The whole length - - - - - - - - - -	$11\frac{1}{2}$
Blade from the angle of the joint, - - - - - - -	$6\frac{1}{4}$
Handle to the angle of the joint, - - - - - - -	$5\frac{1}{4}$
Breadth between the blades in the widest part of the curve, -	3
Breadth of the blades near the point, - - - - - -	$1\frac{3}{4}$
Do. of do. at its centre, - - - - - - -	$2\frac{3}{4}$
Do. of do. near the handles, - - - - - -	$2\frac{1}{4}$

that he may know the part of the head on which he has his fingers; then taking up the blade, he carries the extremity of it along the hollow of the hand, cautiously and gently, into the vagina, sliding it between the two fingers and the head. In this introduction, but more especially in its passage over that part of the head which it first touches, it is, owing to the curve of the blade, necessary to have the handle directed backwards, and almost parallel with the perineum; but as the blade advances, the handle will come more downward and forward. The point of the blade is gently to be insinuated between the head and the pelvis, with a slight wriggling motion; and when the fingers are no longer useful, in guiding the point, they are to be so far withdrawn as not to occupy room. When the extremity gets opposite to the ear, it in general slips very easily inward; and the full introduction is sometimes succeeded by a gush of water, which may be fœtid, and tinged with meconium, although the child be alive. When the blade is fully inserted, the handle is in a line nearly parallel with the inner surface of the symphysis pubis, but not always perfectly corresponding to the axis of the brim of the pelvis, for it is often, as we shall soon observe, carried on a little too far. The blade itself passes over the lateral part of the head, and a very little before the parietal protuberance, it traverses the ear, and its extremity rests on the lateral part of the jaw; or in some cases it does not, particularly if the blade be pretty much curved laterally, extend farther than about the angle of the jaw, or neighbourhood of the mastoid process. But in the introduction, and application of the blade, we do not nicely attempt to describe any given line; but are sure, if we introduce it directly behind the pubis, and fairly over the ear, onwards, till it rest, and the handle be brought forward, that it is in a right direction. If we carry too much to either side of the pelvis, we have an insecure and bad hold of the head. If too far forward on the ear, and the blade traverse a line nearer the face than that described when introduced as directed, it slips. If too far back, it presses on the bulging part of the head, only with its anterier edge, and injures it; or holds so unsteadily, that it slips as in the former case.

The first blade being applied, it seldom requires to be supported but remains sufficiently fixed, between the head and the pubis;

and the operator proceeds to introduce the second, exactly in a reversed manner. When the first was inserted into the vagina, its handle was placed almost directly backward; when the second is inserted, its handle is directed forwards; and therefore, at this time, the thigh of the patient must be raised from the other, by an assistant. The extremity is to be guided past the root of the first blade, into the passage, by the finger; and directed, by it, between the perineum and the head. By moving the handle backward, and carrying, in the same degree, the extremity of the blade up along the sacrum, it traverses the head, in a line, corresponding to the blade, on the opposite side. It glides easily between the head and vagina, along the curve of the sacrum; and in doing so, comes sometimes very readily and at once, to meet the lock of the other blade, and join correctly. But, more frequently, it requires a little address to lock the instrument so, and it may be necessary to withdraw the one or the other a little, generally the first, which has been pushed too far on, in order to make them meet. If this be not sufficient, it will generally be found that the difficulty arises from the blades not being correctly placed on parallel lines, on the opposite sides of the head, but the one a little nearer the face, or occiput, than the other; so that when we attempt to join them they do not lock, but the handles cross or pass each other. This is rectified by moving the one which seems wrong placed gently to a correct position; or, if this cannot be done, it must be withdrawn and re-introduced. To attempt, by force, to thrust the handles together, to make them unite, would give pain; and, most likely, the instrument would slip, when we began to act; and if a young practitioner, who tries the forceps for the first time, were foolishly to attempt to pull with the blades, without locking them, he would only pull them out, without bringing away the head. In joining the instrument, care must be taken, that neither the nympha, nor any other part of the mother, be included in the lock. The finger is therefore passed round the point of junction, before the handles are pressed together, or correctly locked. As the blades are fixed along the sides of the head, which is lying in the axis of the brim of the pelvis, it is evident that when they are joined, the handles will be situated in the same line or axis, and therefore will be

directed downward, and backward; the lock resting on the margin of the perineum.

In this process, we must be deliberate and cautious. We must never restrict ourselves in point of time, nor promise that it shall be very speedily accomplished. If we act otherwise, we shall be very apt to do mischief, or, if we find difficulty, to abandon the attempt. When the pelvis is so contracted as to make it just practicable to introduce the forceps or lever, that part of the head which is above the pubis sometimes projects a little over it, so that we cannot pass the blade until we press backward a little with the finger, on that part which we can reach, or when the head is impacted, we may find it necessary to endeavour to raise it a little, in absence of a pain, before we can insinuate the forceps, so far as to facilitate the introduction of the blade. All attempts to overcome the resistance by force, every trial which gives much pain, must be reprobated. But, on the other hand, as long as his conduct is gentle and prudent, the young practitioner must not be deterred because the patient complains, for the uterine pains are often excited by his attempt; or some women, from timidity, complain when no unusual irritation is given to the parts. Slow, presevering, careful trials, must be made; and I beg, as he values the life of a human being, and his own peace of mind, that he do not desist, and have recourse to the crotchet, in cases at all doubtful, until it has been well ascertained that neither the lever nor forceps could be used.

The instrument being joined, we pull it downward, and move it a little, to ascertain that it is well applied. We then begin to extract, taking advantage of the first pain. If the pains still continue, we pull the instrument downward, and backward in the direction of the axis of the brim. Then we move the handle a little forward, toward the pubis; and again, after halting a second, move it slowly back again, still pulling down. We must not carry the instrument rapidly or strongly forward or backward, against the pubis or perineum, but the chief direction of our force should be downward, in the direction of the axis of the brim. The motion of the pendulum kind is intended to facilitate this, but, if performed with a free, rapid, and forcible swing, the soft parts must be bruised, and great pain occasioned. The operation of extract-

ing is not to be carried on rapidly, or without intermission; on the contrary, we must be circumspect, and imitate the steps of nature. We must act and cease to act alternately, and examine, as we go on, the progress we are making, and also ascertain that the instrument is still properly adapted to the head; for it sometimes slips, or shifts; and this is particularly the case, if it have not been, at first, correctly applied. In this event, we must stop and rectify the error; and, in every instance, must ascertain that the head is descending along with the instrument, otherwise the forceps may come suddenly away. The head being made to descend, the face begins to turn into the hollow of the sacrum, and in the same degree, the handles must move round on their axis; and when the face is thrown fully into the hollow, the handles must be turned more forward and upward, being placed in the axis of the outlet. The pendulum kind of motion must now be very little, and is to be directed from one ischium toward another. As the head passes out, the handles turn up over the symphysis pubis. In this stage we must proceed circumspectly, otherwise the perineum may be torn. This is more apt to happen, if we be not attentive to the correct position of the forceps on the head. The blades are apt to slip a little, and not embrace the head properly, but when it has descended, and is just about to turn, the blades press much on the perineum, and when the head does turn, the convex edge is apt to act so much on the perineum, as readily to tear it.

The power required to be exerted in bringing down the head, must evidently be proportioned to the resistance, and is sometimes very considerable. But much pain to the mother, and fatigue to the operator are sometimes produced, by not pulling or acting in the proper direction.

If the fontanelle present, the blades of the forceps are to be placed directly over the ears, with their extremities a little more backward than in the natural presentation. If the lever be used, its point will rest on, or near, one of the mastoid processes. If the face present, the lever will rest on the back part of the temporal bone, or on the occipital bone: the forceps will have their

points directed toward the vertex, but in face cases, the lever, not being apt to slip, may be used with advantage.*(d)*

If the forceps or lever be injudiciously introduced, the bladder or uterus may be perforated; or if the head be allowed to remain too long jammed in the pelvis, some of the soft parts may slough. The under and posterior part of the bladder is apt to slough off, leaving the woman incapable of retaining her urine.*(e)* This is best prevented, by being extremely attentive in every case, especially in those where the soft parts have suffered much or long from pressure, to evacuate the urine regularly twice a-day, employing, if necessary, the catheter. The parts ought also to be kept very clean, and may be frequently bathed with decoction of camomile flowers.

Having offered these practical directions for the use of the forceps, in cases where the head has descended considerably in the pelvis, I am next to state, that sometimes it remains long very high, or is absolutely prevented, by the contraction of the brim, from making any great progress. When it is altogether above the brim, or only a small part, after many pains, has entered, and the conjugate diameter is evidently under three inches, the forceps, even if the blades could be applied, could not, when joined, be brought through, if they do not approach nearer to each other than is compatible with the safety of the child; and therefore the head must be lessened. The blades of the forceps may be made with little curvature, so that, when joined, they shall not be above two inches and a half from each other; and, when applied, they may be, by force, brought perhaps to this proximity. But can the head be ex-

(d) We are obliged here to dissent from the respectable authority of our author. The forceps, even in face cases, will rarely slip if properly applied. It is generally owing to improper application, not having first accurately ascertained the precise position of the head, that we hear complaints of the forceps not keeping a firm hold. They are to be preferred to the lever even in the cases above alluded to.

(e) The rectum likewise, where it passes over or near the projection of the sacrum, may, by long continued pressure of the head, have its life destroyed, and sloughing take place into the vagina, through which the fæces will be discharged. These deplorable effects sometimes follow cases of impaction, or the locked head, where instruments have not been used.

pected in general to bear this degree of pressure? But, if no such deformity exist, we may contemplate the application of the long forceps in a high situation of the head. There are two causes which may keep the head high. The first is, such a degree of contraction of the brim, as renders it difficult for the uterus to force the head so low, as in ordinary forceps cases, and dangerous to wait until time ascertain, practically and experimentally, the impossibility of accomplishing this. The more yielding parts of the cranium have entered, the scalp probably is swollen, but all the more solid and resisting part of the head is still above the brim. The finger must be carried high, to feel the ear, and ascertain the position, and the common forceps are too short to be applied, as part of the handle would be buried in the vagina. The second cause is, spasmodic action of the uterus, complicated with some degree of contraction in the brim, but not so much as to prevent regular and efficient action from forcing down the head; for I have known this state occur in those who have formerly borne living children without aid. When spasm in such instances take place, and is not speedily removed, this very formidable state may be met with; and so far from the head being forced lower by the pains, it is sometimes rather raised a little during the pain. Long delay, in this state, is dangerous; and whatever practice is to be adopted, must be resorted to promptly. Inflammation is a frequent consequence, and may begin previous to delivery.

It long ago was, and still with many is, the practice, in this state, to turn the child; but the force required to pull the head through a contracted pelvis, can scarcely fail to be fatal to the child, to say nothing of the difficulty and danger of turning in a uterus much contracted. Lessening the head implies, to a certainty, the death of the child, which is barely possible to be avoided by the other practice; but it does not, in any degree, endanger the mother. A third practice, and that which comes before us now for consideration, is the application of long forceps. It is vain to propose this, when the head possesses its usual firmness, and is of the ordinary size, if the pelvis do not, with the soft lining, measure three inches; for if this be not the case, the forceps, when joined, could not be brought through the pelvis, unless they were so shaped, as to per-

mit of squeezing the head to a degree most probably incompatible with life. Can the blades be introduced when the conjugate diameter does measure three inches? They certainly may: but it is one thing to introduce them, and quite another thing to apply them over corresponding parts of the head, so as to be able to lock them, and obtain a secure fixture. The blade, at the pubis, may be applied in a proper direction, but the projection of the sacrum may turn the other blade more easily aside than an unexperienced man would suppose; and those who have most frequently tried it, will best know the difficulty of adjusting the blades. I have seen much want of dexterity in introducing the common forceps, and the practitioner repeatedly baffled by the instrument slipping. The application of the long forceps requires more dexterity and experience; and as great danger may arise from the fruitless irritation which is given in those unsuccessful attempts, which, besides, end at last in the use of the perforator, and often in the loss of the mother, I cannot conscientiously advise any practitioner, until he have become well acquainted, practically, with the application of the common, to attempt the use of the long forceps. It is easy to say, let such a man send for another who has more dexterity. Such a person may not perhaps be in his vicinity; and he must, therefore, act according to the best of his skill; and certainly ought not to make a painful and rash attempt to apply the long forceps, but had better lose the child, than destroy both parent and child. A sensible man will make cautious, and possibly successful, attempts to apply the forceps, without danger to the parent: he will satisfy himself whether he can succeed in this way. He will try early, and before the parts are in such a state as to be irritated by his trial; and if, after a well conducted attempt, he fail, he has not injured his patient, and can still use the crotchet successfully. It is not so with the man of inexperience, for too often his attempts only add to the danger; and it is still worse for the patient if two such practitioners meet; for both must try their skill, and double suffering he inflicted. My opinion, then, on this question, is, that a well instructed practitioner ought to make a cautious, steady, but gentle attempt, to employ the long forceps, when the crotchet is not decidedly necessary; but he ought never to make reiterated and irri-

tating efforts, which can only end in the production of fatal inflammation.* I cannot say that I have known the lever prove successful, when the forceps failed, although, *a priori*, a superiority might have been expected, as only one blade requires to be introduced.(*e*)

When we are going to use the long forceps, in the ordinary position of the head, it may be sufficient to introduce two fingers, to guide the blade; but sometimes it is necessary, or useful, to introduce the hand into the vagina, as thereby the blade can be more safely and readily conducted over the head. The manner of application is the same as with the short forceps. The blades being fixed, and locked, we next pull a little, and with gradually increasing strength, to see that the hold is secure: being satisfied of this, we endeavour to bring down the head, by drawing, as has formerly been described, in the proper direction, that is, downward and backward. If the head be of full size, and firm, and the blades made to approach considerably nearer each other, than three inches, at their greatest curvature, the handles at first cannot touch each other, nor come quite in contact, till so much pressure have been applied, as shall diminish the size of the head sufficiently. This strong pressure it is always possible to employ, but not always safe; and therefore, if the blades are made to approach near each other, we never ought to make more pressure than is necessary. If it be often difficult to extract the head when it is impacted, within reach of the short, it must be still more so, to bring it down with the long forceps, for less has entered the brim, and the resistance is greater. In this attempt, it is not the child, only, that is at stake, but the mother is in jeopardy, from the pressure on the soft parts, and this pressure must, in spite of all our caution, and

* Smellie and Pudecomb first used the forceps in this high situation. Levret does not even notice such a case; succeeding writers have held various opinions. Baudelocque prefers turning, when that is practicable; Capuron joins with him, when the conformation of the pelvis is good; but when it is a little contracted, he prefers the forceps. In greater degrees, he looks on the instrument as murderous. Flamant and Gardien prefer it to turning. Dr. Hamilton and Dr. Osiander both use it. Saxtorph and Plenk, again, positively forbid it.

(*e*) But when introduced can it grasp the head so as to act with any effect in bringing it through the brim or superior strait?

all the time we can take, often be great, but it never ought to be unprofitable. For instance, if the forceps be completely closed, showing that they cannot be made less, and if, by the finger, we find that the blades are in a manner jammed in the conjugate diameter, and that the most curved part has not yet passed, is it not evident, that farther attempts must be fruitless, and inexpressibly dangerous? Is it not physically impossible, indeed, to deliver, unless the pelvis give way, or the blades be not tempered but yield, and come closer together? This danger may be avoided, it may be replied, by diminishing the curve, or distance of the blades. True: it is possible to crush the head, into a very small size; but is it not better, as this must destroy the child, to open the head, and deliver with safety at least to the mother.

ORDER 2. CASES REQUIRING THE CROTCHET.

It unfortunately happens, that sometimes the pelvis is so greatly deformed, as not to permit the head to pass, until it have been lessened by being opened.

It is universally agreed, that a living child at the full time cannot pass through a pelvis whose conjugate diameter is only two inches and a half. It has been even stated, by high authority, that if the dimensions were "certainly under three inches, a living child could not be born." This opinion is generally correct, and the few exceptions depend on the original size and peculiar constitution of the child; together with the pliability of the cranium, or the peculiar shape of the pelvis; and the force and activity of the uterus, as well as the general strength of the woman. There have been instances, where, even by the efforts of nature, living children have been expelled through a pelvis measuring only three inches; and there are similar examples of the delivery being, under the same conformation, accomplished by instrumental aid.* Every

* M. Baudelocque relates a most interesting case, where there were decided marks of the fœtus being dead in utero, and yet these were delusive; for, by the forceps, the woman was delivered of a living child, although the pelvis measured only about three inches. L'Art des Accouch. last edition, sect. 1917.—Cases in

one knows, that, even at the full time, the child is sometimes very small; or the head, when not very diminutive, may be extremely pliant. But in making up our judgment in a case of deformity, we are not justified in calculating on the happy coincidence of such a state; but ought, unless the finger can inform us to the contrary, to reason on the ordinary size and firmness of the cranium. We are not warranted, therefore, instantly to open the head, merely because we estimate that the pelvis does not, in its conjugate diameter, measure fully three inches; but because we have ascertained, by a sufficient but not a dangerous trial, that the uterine action cannot force down the head, so that the forceps or vectis may be applied or acted with effectively. In all cases where the dimensions and circumstances of the case are barely such, as to warrant a belief that the head must be opened, an attempt ought previously to be made, not in a careless or hasty, far less in a dangerous manner, but deliberately and attentively, to introduce and act with the vectis or forceps.

We may, however, if the dimensions be much under three inches, be assured, that delivery cannot be accomplished without the destruction of the child. But as it is a matter of great nicety to determine, within a fraction of an inch, the capacity of the pelvis, a practice founded altogether on arithmetical directions must be unsafe. In every case, therefore, we ought to allow some time for the pains to produce an effect; and this time should be longer or shorter according as, in our estimation, the dimensions diminish below three inches. When this is the case, even in a small degree, we have no reason to expect that the head can pass, unless it be unusually soft and small, or burst,* or be artificially opened; and therefore it should, for the advantage of the mother, be perforated as soon as the os uteri is properly dilated; and this ought always

point may also be seen in Dr. Alexander Hamilton's Letters, pp. 94. 102. 13.—Similar instances have come within my own knowledge.

* So far as I can judge, the sutures yield sooner than the scalp, and the brain is effused, or pushed out like a bag. When the integuments open first, it is owing, I apprehend, to sloughing from pressure and injury. A very distinct case of spontaneous bursting of the cranium may be found in Dr. Hamilton's Cases, p. 17.

to be effected in, at the farthest, the time formerly specified; but until the os uteri be fully opened, no attempt to introduce the perforator can be sanctioned. One circumstance, however, must be attended to in our consideration, namely, that the promontory of the sacrum may be directed somewhat obliquely, in which case, although the conjugate diameter measured from that to the front, do not extend to three inches, yet toward the side, the diameter be greater. The thickest part of the head may find its way down there, whilst a narrower or more compressible portion may pass at the smaller part. In cases at all doubtful, it is imperative to wait for some time to ascertain what can be effected; not that delay is less injurious in crotchet than in forceps cases, but because interference in the latter, may be productive of much benefit, without purchasing that at the risk of any mischief; whilst in the former, the greater safety, or abridged suffering, of the mother, arising from the perforation, necessarily implies the destruction of the child. Some eminent men on the continent seem to think, that the long forceps may in most cases supersede the necessity of the crotchet; but I must dissent from this opinion, and whilst I endeavour to prevent the unnecessary loss of the child, I cannot place out of consideration the danger, if not the destruction, of the mother, which may follow from improper and injudicious delay.

But although it be thus laid down as a general rule, that the pelvis which measures fully three inches in its conjugate diameter, may possibly admit a living child to pass, either by the application of the vectis or forceps, or still more rarely by the efforts of the womb, yet it is nevertheless true, that sometimes the child must be destroyed, even when the space is above three inches. This may become necessary, owing to the great size of the child and firmness of the cranium, or a hydrocephalic state of the head;* or the soft parts in the pelvis may swell so much as to diminish, in an increasing ratio, the size of the pelvis, and effectually to obstruct delivery.†

* I have seen a cranium so enlarged with water, that when it was inflated after delivery, so as to resume its former size, it measured twenty-two inches in circumference.

† Baudelocque l'Art. des Accouch. sect. 1705.—See also a case in point in Dr. A. Hamilton's Letters, p. 83.—Every attentive practitioner must, from his own experience, admit the fact.

The parts may also be so tender as to render even a common examination painful, and to prevent the application of the forceps, or their effective action, in a case merely equivocal. Alarming convulsions may likewise induce us to perforate the head in a case of deformity, where it is perhaps possible that the vectis or long forceps might succeed, after a greater delay or length of time than is compatible with the safety of the mother; but this combination of evils must be rare. No practitioner, I believe, in this city, has met with such a case. At one period, however, the crotchet was employed in cases of convulsions, where the vectis or forceps would now be used.

By the rash and unwarrantable use of the crotchet, living children have been drawn through the pelvis with the skull opened, and have survived in this shocking state for a day or two.*

To prevent all risk of bringing a living mutilated child to the world, and to avoid, at the same time, killing or giving pain to the child,† even in those cases which clearly demanded the use of the perforator, some have delayed operating until the child appeared to have been destroyed by the expulsive efforts, or other causes, and have therefore been anxious to ascertain the signs by which the death of the child might be known.‡ It was still more desir-

* Vide Mauriceau, obs. 584.—La Motte, case CXC.—Hamilton's Letters, p. 153.—Peu La Pratique, p. 346.—Crantz de Re Instrument., &c. sect. 38.

† It has been disputed, whether the child in utero was capable of sensation, but both facts and reasoning are in favour of its sensibility.

‡ The signs of a dead child have been described to be a feeling of weight, or sensation of rolling in the uterus, want of motion of the child, pallid countenance and sunk eye, coldness of the abdomen, with diminution of size, flaccid breasts which contain no milk, fœtor of the discharge from the vagina, liquor amnii coloured apparently with meconium, although the head presents, puffy feeling of the head, want of firm tumour formed by the scalp when the head is pressed in a narrow pelvis, no pulsation in the cord, &c. Most of the cases requiring the crotchet cannot be benefited by any marks characterizing the death of the child in the progress of gestation; and we well know, that the child may die during labour, without testifying this for a length of time by any sensible signs; and that those enumerated above are deceitful, I believe every attentive and unprejudiced practitioner will join with me in maintaining. Nothing but unequivocal marks of putrefaction of the child itself can make us certain, and these cannot be discovered for some time. Fœtor of the discharge is not a test of this.

able to know these, at a time when the forceps were undiscovered. But the signs are in general extremely equivocal, nor is this much to be regretted, for we do not operate because the child is dead, but because it is impossible for the woman to be otherwise delivered.

The steps of the operation are very simple: the rectum, but especially the bladder, being properly emptied, we place the forefinger of one hand on the head of the child, and with the other hand convey the perforator to the spot on which the fingers rest. The instrument, being carried cautiously along the finger as a director, can neither injure the vagina nor os uteri, and in general no difficulty is met with in this part of the operation. Sometimes, however, in very great deformity, the os uteri is placed so obliquely, that it must previously be gently brought into the most favourable, that is, the widest part of the pelvis; and afterwards, the perforator, being placed on the head, must have its handle in the axis of the brim, which may require the perineum to be stretched back. These points being attended to, the scalp is then to be pierced, and the point of the instrument rests on the bone, through which it directly, or after a momentary pause, is to be pushed, either by a steady thrust, or a boring motion.(*f*) It is to be carried on, till checked by the stops. The blades are then to be opened, so as to tear up the cranium; and in order to enlarge the opening, they may be closed and turned at right angles to their former position, and again opened, so as to make a crucial aperture. If the liquor amnii have been well evacuated, and a portion of the cranium have entered the pelvis, the perforation can be made without any assistance; but if the whole of the head be above the brim,

Vide Mauriceau. Obs. 281. When a woman bears a child which has been for some time dead, we must watch lest her recovery prove bad.

I may notice here, that, in order to get rid of the crotchet, small forceps have been applied over the collapsed head, or a kind of crutch or tire-tête has been inserted within the cranium. Some have employed a trephine in place of a perforator.

(*f*) Where one of the sutures or fontanelles can be conveniently reached, the operation is facilitated by perforating through these, as must occur to every one.

it may be necessary to have it kept steady, by pressure above the pubis. It may be proper to add, that if the face present, we must perforate the forehead, just above the nose. If we have turned the child, and wish to open the head, the instrument must be introduced behind the ear.

The brain is next to be broken down, by turning the perforator round within the head. If part of the cranium have entered the pelvis, some of the brain will come out with a squirt, whenever the bones are opened; and at all times we have more or less hemorrhage from the vessels of the brain. Sometimes the blood flows very copiously. We have been advised always to delay a considerable time after opening the head before we apply the crotchet, and doubtless, if the perforation have been made early, we may leave the case for a little to the operation of the uterine efforts, which, although they may not effect delivery, yet may force the yielding head down, and render the action of the crotchet less severe. But when the labour has been already long protracted, the propriety of this direction is to be disputed, on grounds I have formerly explained, relating to instrumental aid. If there be reason to believe that the crotchet can at once be easily used, what advantage is there in delay? In greater deformity there may, on the other hand, be advantage in delaying for some time. Dr. Osborn, in his Essays, advises, that the head should be opened early, and that we should then delay to extract for thirty hours. In cases of deformity, decidedly requiring the use of the crotchet, the first direction is important; but the delay of the specific number of thirty hours is, in most cases, if not in every instance, much too long; and I question if it be sufficient to produce, in any case where the child was alive when the skull was perforated, such a degree of putrefaction as materially to facilitate the operation. The chief benefit of delay, is to bring as much of the cranium as possible into the pelvis.

If the deformity have been no more than just sufficient to require the use of the perforator, then, if the pains become strong, it is possible for the head to be expelled without further assistance. But if the deformity be greater, or the pains weak, only the pliable part of the cranium will descend, and the face and basis of the skull re-

main above the brim of the pelvis, until artificial force be used. When this aid is required, which is generally the case, the crotchet is to be introduced through the aperture of the cranium, and fixed upon the petrous bone, or such projection of the sphenoid bone, or occiput, as seems to afford a firm fixture. We then pull gently, to try the hold of the instrument; and this being found secure, we proceed to extract in the direction of the axis of the brim, by steady, cautious, and repeated efforts, exerting, however, as much strength as may be necessary to overcome the difficulty. In doing this, we must always keep a hand, or some of the fingers, in the vagina and on the cranium, to save the soft parts, should the instrument slip. If the force be steadily and cautiously exerted, we may always feel the instrument slipping or tearing the bone, and have warning before it comes away. We should, in extracting, co-operate as much as possible with the pains. Sometimes an extractor, in the form of pincers is used in place of the crotchet, or different *tire-têtes* have been proposed.

But it may happen, that the pelvis is so small, as to require the head to be broken down, and nothing left but the face and base of the skull. This is an operation which will be facilitated by the softening of the head, which takes place some time after death, rather by pressure than putrefaction. If the child be recently dead, the bones adhere pretty firmly; and, in a contracted space, it will require some management to bring them away. But if the parts have become somewhat putrid, or been much squeezed, or the child have been dead, before labour began, the parietal and squamous bones come easily away, and the frontal bones separate from the face, bringing their orbitary processes with them. We have then only the face and basis of the skull left, and if the pelvis will allow these remains to pass, then the crotchet can be used. I have carefully measured these parts, placed in different ways, and entirely agree with Dr. Hull, a practitioner of great judgment and ability, that the smallest diameter offered, is that which extends from the root of the nose to the chin. For, in my experiments, after the frontal bones were completely removed, this did not in general exceed an inch and a half. It is therefore of great advantage, to convert the case into a face presentation, with the root of the nose

directed to the pubis. The size of the crotchet, which ought to be passed over the root of the nose, and fixed on the sphenoid bone, must, however, be added to this measurement. I never have yet been so unfortunate as to meet with what may be considered as the smallest pelvis, admitting of delivery *per vias naturales*;* but I would conclude, that whenever the pelvis, with the soft parts, measures fully an inch and three-quarters,† or, if the head be unusually small, the child not being at the full time, an inch and a half, the crotchet may be employed, provided the lateral diameter of the aperture in the pelvis be three inches, or within a fraction of that, perhaps two inches and three-quarters, if the head be small or very soft: and the operation will be easy, as we extend the diameter of the pelvis beyond what may be considered as the minimum. It is scarcely necessary to add, that if the outlet be much contracted, it will make the case more unfavourable; and where we have any hesitation, owing to the shape and dimensions of the brim, will determine us against this operation. It ought not to be forgotten, that it is one thing to extract, and another to extract safely in extreme deformity. Gardien mentions, that Boyer, and other judicious practitioners, had witnessed repeatedly, the mutilation and extraction of the child by eminent men, but the mother sunk immediately. In two of these cases the uterus was ruptured.

In this manner of operating, the face is drawn down first, and the back part of the occipital bone is thrown flat upon the neck like a tippet. If we reverse this procedure, and bring the occiput first, and the face last, fixing the instrument in the foramen magnum, then, as we have the chin thrown down on the throat, we must have both the neck and face passing at once, or a body equal to two inches and three quarters. If on the other hand, we fix

* I cannot learn that any case of extreme deformity in a pregnant woman, such as to render it barely possible to deliver with the crotchet, or necessary to have recourse to the cæsarean operation, has occurred in this city, [Glasgow] since the year 1775, when Mr. Whyte performed the latter operation.

† M. Baudelocque considers the crotchet as inadmissible, when the pelvis measures only an inch and two thirds.

the instrument on the petrous bone, which is certainly preferable to the foramen magnum, and, bring the head sideways, we must have both that bone and the vertebræ passing at once, or a substance equal to two inches and a half in diameter; and if the head pass more obliquely, then it is evident that the size must be a little more. Although, therefore, Dr. Osborn be correct, in saying, that the base of the cranium, turned sideways, does not measure more than an inch and a half; yet we must not forget, that when the opposite side comes to pass, the neck passes with it, which increases the size.

The head being brought down and delivered, we then fix a cloth about it, and pull the body through; or, if this cannot be done, we open the thorax, and fix the crotchet on it, endeavouring to bring down first a shoulder, and then the arm.

In operating with the crotchet, we must always bring the head through the widest part of the pelvis; but where the deformity is considerable, no small force is requisite. This is productive of pain during the operation, and of danger of inflammation afterwards, which may end in the destruction of some of the soft parts; or, affecting the peritoneum, it may prove fatal to the patient. From injury done to the bladder, retention of urine may be produced, which, if neglected, is attended with great risk. Incontinence of urine is less to be dreaded, as it is sometimes cured by time. Severe pain in the loins and about the hips, with lameness, is another troublesome consequence. If the patient be not affected with malacosteon, the warm, and at a more advanced period, the cold bath, friction, and time, generally prove successful. Much advantage is also derived in this kind of pain, from applying a compress on the sacro-sciatic notch, and binding it on with a roller, wound firmly round the pelvis, and all the upper part of the thigh.

In considering the necessity of using the crotchet, I have not, more than in the observations on the forceps, made any special remarks on those instances, where the capacity of the pelvis is diminished by an enlarged ovarium, or other tumours, as the practice is the same, or when a different course is proper, that has been pointed out in the commencement of this work.

To avoid the destruction of the child, and the severity of the operation of extracting it, the induction of premature labour has been proposed;* and the practice is defensible, on the principle of utility as well as of safety. We know that the head of a child, in the beginning of the seventh month, does not measure more than two inches and a half in its lateral diameter; two and three quarters in the end of that month; and three in the eighth month. We know further, that there is no reason to expect that a full grown fœtus can be expelled alive, and very seldom, even after a severe labour, dead, through a pelvis whose dimensions are under three inches; and lastly, we have many instances where children born in the seventh month have lived to old age. Whenever, then, we have, by former experience, ascertained beyond a doubt, that the head, at the full time, must be perforated, it is no longer a matter of choice, whether, in succeeding pregnancies, premature labour ought to be induced.(*g*) It is certainly easier for the mother than the application of the crotchet, and no man can say that it is worse for the child.† All the principles of morality, as well as of

* This practice was first adopted about the middle of the last century, by Dr. Macauly in London, and was afterwards followed out by others. About twenty years after this, it was proposed on the continent by M. Roussel de Vauzeme; and lately Mr. Barlow, in the eighth Vol. of Med. Facts, &c. has given several cases of its success.—See also Med. and Phys. Journal, Vols. XIX. XX. and XXI. It may not be improper for me to mention as a caution, that I have been called to consider the expediency of evacuating the liquor amnii, where there was no deformity of the pelvis, but merely a collection of indurated fæces in the rectum. Dr. Merriman has a very sensible paper on this subject, in Med. Chir. Trans. Vol. iii. p. 123. where he states that, out of 47 cases of premature labour, induced on account of distorted pelvis, 19 children have been born alive, and capable of sucking. He very properly advises that, before puncturing the membranes, it should be ascertained that the presentation is natural. If it be not, it may become so, in a day or two.

(*g*) The reader is referred to a case of premature labour, artificially induced, where the child lived some time after delivery, related in the Eclectic Repertory, Vol. I. p. 105, and seq. The same woman was afterwards *prematurely* delivered of a child before the expiration of the eighth month, which lived and did well.

† It has been proposed, by low diet, to restrain the growth of the child, but this is a very uncertain and precarious practice.

science, justify the operation; they do more, they demand the operation. The period at which the liquor amnii should be evacuated must depend upon the degree of deformity; and where that is very great, it must be performed at a period so early, as to afford no prospect of the child surviving: it must be done in this case to save the mother, or sometimes it may be requisite to use the lever, even when labour has been prematurely brought on. There are cases, and these cases are not singular, where the bones gradually yield, and become so distorted, as at last to prevent even the crotchet from being used. Now, granting a succession of pregnancies to take place in this situation, it follows, as a rule of conduct, that if the deformity be progressive, we should regularly shorten the term of gestation, exciting abortion, even in the third month, if necessity require it, and treating the case as a case of abortion, enjoining strict rest, and plugging the vagina to save blood. Some may say, Shall we thus, by exciting abortion, destroy many children to save one woman? This objection is more specious than solid. Those who make it would not, in all probability, scruple to employ the crotchet frequently; and where is the difference to the child, whether it be destroyed in the third or in the ninth month? How far it is proper for women in these circumstances to have children, is not a point for our consideration, nor in which we shall be consulted. I would say, that it is not proper; but it is no less evident, that when they are pregnant we must relieve them.

The interval which elapses between puncturing the membrane, and the accession of labour, varies from two to five or six days. If shivering come on before pain, an opiate is the best remedy.

CHAP. VII.

Of Impracticable Labour.

It may be urged against the reasoning in the conclusion of the last chapter, that the cæsarean operation ought to be performed; and, doubtless, in cases of extreme deformity, if the proper time for inducing labour be neglected, it must be performed. But the danger is so very great to the mother, that this never can be a matter of choice, but of necessity. In balancing the cæsarean operation against the use of the crotchet or the induction of abortion, we must form a comparative estimate of the value of the life of the mother and her child. By most men, the life of the mother has been considered as of the greatest importance, and therefore, as the cæsarean operation is full of danger to her, no British practitioner will perform it, when delivery can, by the destruction of the child, be procured *per vias naturales*. As, in many instances, the woman labours under a disease found to be hitherto incurable, it may be supposed, that the estimate will rather be formed in favour of the child. But, in the first place, we cannot always be certain that the child is alive, and that the operation is to be successful with respect to it; and, in the second place, it ought to be considered, how far it is allowable, in order to make an attempt to save the child, to perform an operation, which, in the circumstances we are now talking of, must, according to our experience, doom the mother to a fate, for which, perhaps, she is very ill prepared.

There are, I think, histories of twenty-three cases, where this operation has been performed in Britain; out of these only one woman has been saved,* but eleven children have been preserved. On the continent, however, where the operation is performed more frequently, and often in more favourable circumstances, the number of fatal cases is much less.† If we confine our view to the success

* Vide a case by Mr. Barlow, in Med. Records and Researches, p. 154.

† According to Dr. Hull, we had, when he published, at home and abroad, records of 231 cases of this operation, 139 of which proved successful.—Vide Translation of M. Baudelocque's Memoir, p. 233.

of the operation in this island, [Great Britain] we must consider it as almost uniformly fatal to the mother. This mortality is owing, not only to the injury done to the cavity of the abdomen, and the consequent risk of inflammation, even under the most favourable circumstances, and with the best management; but also to the morbid condition of the system, at the time when the operation was performed, many of the women being affected with malacosteon, which would in no very long time have of itself proved fatal. These dangers have, probably, sometimes been increased by delaying the operation, until much irritation had been excited. From this unfavourable view, it may perhaps arise as a question, whether nature, if not interfered with, might not, as in extra-uterine pregnancy, remove by abscess the child from the uterus? It has been said, that this event has taken place; but I do not recollect one satisfactory case upon record. Whenever this has happened, the uterus has either been ruptured, and the child expelled into the cavity of the abdomen; or, in a very great majority of the instances, the child has, evidently from the first, been extra-uterine. We are therefore led to conclude, that the mother who cannot be delivered by the crotchet, must submit to the cæsarean operation, or must inevitably perish, together with the fruit of her womb.

It has been asserted by Dr. Osborn, that this operation can seldom if ever be necessary; never where there is the space of an inch and a half from pubis to sacrum, or on either side: and that he himself has, in a case where the widest side of the pelvis was only an inch and three quarters broad, and not more than two inches long, delivered the woman, by breaking down the cranium, and turning the basis of the skull sideways. As the patient recovered, and afterwards, I think, died in the country, where she could not be examined, we cannot say to a certainty what the dimensions of the pelvis were. Dr. Osborn must only speak according to the best of his judgment. I have the highest respect for his character and for his works, and nothing but irresistible arguments could make me doubt his accuracy. But from the statement which I have already given of the dimensions of the head, when broken down at full time, as well as from the experiments of Dr. Hull, and the arguments of Dr. Alexander Hamilton and Dr. Johnson, I

am convinced that there must be some mistake in Sherwood's case. Had the child been brought by the face, there might have been room for it to pass, so far as the short diameter of the passage is concerned; but the lateral diameter is too small for the head, if of the usual size, to pass, in that which I consider as the most favourable position. In the cases related by Dr. Clarke,* who was a practitioner of the highest authority, we are informed, that the short diameter of the passage did not exceed an inch and a half, but we are not informed of the lateral extent. As the women both recovered, the precise dimensions and construction of the pelvis cannot be determined. It is likewise much to be regretted, that the diameter of the cranium, or cranium and neck, in the state in which they may have been supposed to come through the passage, was not taken after delivery. Where, and only where, it can be ascertained, that the head placed in the position in which it was drawn through the pelvis, does not form, in any part, a substance measuring more than an inch and a half by two inches or three inches, it is allowable to infer, that the cavity through which it passed may have been as small as that.

Finally, this is a question on which, although we may lay down a general rule, we must admit of some exceptions; for a premature, or a very small child, may be brought through a pelvis which will not permit, by any means, an ordinary sized fœtus to pass. But it behooves us, in our reasoning, to judge every child to be at the full time, unless we know the contrary, and to make an estimate on the average magnitude; and until the contrary is proved, by dissection of the mother, or careful and rigid measurement of the child after delivery, I must hold to the position formerly laid down, that the crotchet cannot be used when the child is of the full size, unless we have a passage through the pelvis, measuring fully an inch and three-quarters in the short diameter, and three inches in length; or, if the child be premature and soft, an inch and a half broad, and two inches and three-quarters long.† It is in this ex-

* Vide Dr. Osborn's Essays, p. 203, and London Med. Journal, VII. p. 40.

† I believe few will dispute, that the precise deformity requiring the cæsarean operation, must to a certain extent, be modified by the dexterity of the

treme deformity even questionable whether extraction be not as dangerous as the cæsarean operation, and we always ought to consider well, before we give the preference to mutilation, in such cases.

The operation itself, although dangerous in its consequences, and formidable in its appearance, is by no means difficult to perform. Some advise the incision to be made perpendicularly in the linea alba,*(h)* others transversely, in the direction of the fibres of the transversalis muscle. Perhaps the precise situation and direction of the wound must be regulated by the circumstances of the case, and the shape of the abdomen; but in general, I apprehend, that the transverse wound will be most eligible. The length of the incision, through the skin and muscles, ought to be about six inches; and if a vessel bleed, so as to require the ligature, it will be proper to take it up before proceeding further. The uterus is next to be opened by a corresponding incision; and as the fundus, owing to the pendulous shape of the abdomen, is the most

operator. I shall suppose that a surgeon in a remote part of the country, far from assistance, is called to a patient, whose child is evidently alive, and whose pelvis measures just as much as would render it barely possible to use the crotchet, were he dexterous; but he has not a belief that he could accomplish the delivery with that instrument. Would that man be wrong in performing the cæsarean operation? In such a case I would say, upon the principle that a man is to do the most good in his power, that if no operator more experienced can be had within such time as can be safely granted, the surgeon ought, after taking the best advice he can procure, to perform the cæsarean operation, by which he will save one life at least. By the opposite conduct, there is ground to fear that both would be lost. In a case related in the Jour. de Med. for 1780, a woman, in the village of Son, had the child turned, and even the limbs separated without delivery being accomplished; four days afterwards, the cæsarean operation was performed, and the woman died.

(h) Mauriceau, Baudelocque, Capuron, Solayres, and the generality of the modern French Accoucheurs and Surgeons who have had the greatest success in performing the Cæsarean operation, prefer making the incision in the linea alba. Cooper agrees in recommending this mode. Vide Dict. of Surgery; Dorsey's Edition, Vol. I. p. 163. Some of the reasons assigned for this preference, are that the incision is made with greater facility and is less painful, because there are fewer parts to be divided; and the hemorrhage is less profuse. The uterus is readily brought into view, and it is cut in its middle portion, and parallel to its principal fibres.

prominent part, the incision will in general be made there, unless the external wound be made lower than usual. The child is next to be extracted, and immediately afterward the placenta. One assistant is to take the management of the child, whilst another takes care to prevent the protrusion of the bowels. In this part of the operation, although pretty large vessels are divided, yet the hemorrhage is seldom great: it has, however, proved fatal. The external wound is now to be cleansed, its sides brought together, and kept in contact by a sufficient number of stitches passed through the skin alone, or the skin and muscles, avoiding the peritoneum. Adhesive plasters are to be placed carefully in the intervals; and a bandage with a soft compress being applied, the patient is to be laid to rest. An anodyne should be given, to diminish the shock to the system; and our future practice must, upon the general principles of surgery, be directed to the prevention or removal of abdominal irritation or inflammation. The patient may die, although there be very little inflammation of the peritoneum. It has been proposed by Dr. Hull, to whose work I refer for more particular information, to operate as soon as the os uteri is dilated, and before the membranes burst, in order that the wound of the uterus may contract into a smaller size.

In order to supersede the cæsarian operation, and even to avoid the use of the crotchet, it was many years ago proposed to divide the symphysis pubis, in expectation of thus increasing the capacity of the pelvis. This proposal was founded on an opinion, that the bones of the pelvis, either always or frequently did spontaneously separate, or their joinings relax, during gestation and parturition, in order to make the delivery more easy. In deformity of the pelvis, the symphysis was first divided by a knife during labour, by M. Sigault, in 1777, assisted by the ingenious M. Alphonse Le Roy. The operation was afterwards repeated on the continent, with various effects according to the degree of deformity, and extent of the separation.(*i*) It has only once* been adopt-

(*i*) It has of late again been recommended, by some French writers of eminence; vide Capuron cours theorique et pratique, &c. p. 673 and seq. Gardien Traité d'Accouchemens, Tom. 3, p. 20, and seq. and J. B. De Mangeon, De ossium pubis Synchondrotomia. Parisiis, 1811.

* Vide case by Mr. Whelchman, in London Med. Jour. for 1790, p. 46.

ed in this country, because it is not only dangerous in itself to the mother, but also of limited benefit to the child. We have already seen, that there is a certain degree of deformity of the pelvis, which must prevent a child at the full time, and of the average size, from passing alive, or with the head entire. Now, in a case where it is barely impracticable to use the lever or forceps, and where it just becomes necessary to open the head, the division may perhaps save the child, and with less danger to the mother than would result from the cæsarean operation, which is the only other chance of saving the infant. If we increase the contraction of the pelvis beyond this degree, then the chance of saving the child is greatly diminished; and the extent to which the bones must be separated to accomplish delivery, would in all probability be attended with fatal effects. In such a case, the crotchet can be employed with safety to the mother, and continues to be eligible, until we find the space so small as to require the cæsarean operation; and in this case, the division can do no good. It cannot even make the crotchet eligible, owing to the shape of the pelvis in malacosteon, and the great mischief which would be done to the parts after the division, by the necessary steps of the instrumental delivery. There is only one degree of disproportion, then, betwixt the head and the pelvis, which will admit of the division; but the smallest deviation from this, destroys the advantage of the operation. Now, as this disproportion is so nice, we cannot, in practice, ascertain it; for although we could determine, within a hundredth part of an inch, the capacity of the pelvis, yet we cannot determine the precise dimensions of the head, and thus establish the relation of the two. On this account, the division of the symphysis pubis cannot be adopted with advantage, either to the mother or child.

CHAP. VIII.

Of Complicated Labour.

ORDER 1. LABOUR COMPLICATED WITH UTERINE HEMORRHAGE.

During labour, there is always a slight discharge of bloody slime, when the membranes begin to protrude; for the small vessels of the decidua, near the cervix uteri, are opened. In some cases, a very considerable quantity of watery fluid, tinged with blood, flows from the womb, but this is attended with no inconvenience. It may happen, however, that pure blood is discharged, and that in no small quantity. If this take place in the commencement of labour, it differs in nothing from those hemorrhages which I have formerly considered. But occasionally the flooding does not begin, till the first stage of labour be nearly or altogether completed. If the membranes be still entire, it proceeds certainly from the detachment of part of the placenta or decidua, and often is connected with unusual distention of the uterus, from excessive quantity of liquor amnii, or with ossification of the placenta. If the membranes have broken, then we must consider the possibility of its proceeding from rupture of the uterus, and must inquire into the attending symptoms. Sometimes it will be found to proceed from tedious and exhausting labour, from improper exertion, or rude attempts to dilate the os uteri, or alter the presentation; or it may be caused by rupture of the umbilical cord. Now, in this order of labours, the practice is very simple, and admits of little difference of opinion. For every experienced practitioner must admit, that when the hemorrhage is considerable, and is increasing, or continuing, the only safety consists in emptying the uterus. If the pains be smart, frequent, and effective, the labour advancing regularly, and there be reason to suppose that it will be finished before the hemorrhage have continued so long as to produce injurious effects, we may safely trust to nature. We must keep the patient very cool, and in a state of perfect rest. But if the pains be weak, ineffective, and rather declining than increasing, whilst the

hemorrhage is rather increasing than diminishing, we must deliver the woman, either by turning the child, or applying instruments, according to the circumstances of the case, and the situation of the head. Opiates are useful.

ORDER 2. WITH HEMORRHAGE FROM OTHER ORGANS.

When hemorrhage takes place from the lungs or stomach during parturition, we ought to have recourse, in the first place, to blood-letting, or such other means as we would employ were the patient not in labour. If the hemorrhage continue violent, or be increased by the pains of parturition, we must consider, whether artificial delivery, or a continuance of the natural process, will be attended with least exertion and irritation, and consequently with least danger, and we must act accordingly. In general, these cases can seldom be trusted to nature, and prompt delivery is requisite. It is scarcely necessary to add, that a complication of labour, with other diseases than hemorrhage, but which may be incurred by it to a dangerous or fatal degree, will equally justify interference.

ORDER 3. WITH SYNCOPE.

Syncope may proceed from various causes, such as hemorrhage, or rupture of the uterus; but these cases have been already, or will be considered. It may proceed from a delicate nervous constitution, from long continued labour, from particular states of the heart or stomach, and from passions of the mind. A simple paroxysm of fainting, unless it proceed from causes which would otherwise incline us to deliver, such as tedious labour, flooding, &c. is not to be considered as a reason for delivering the woman. We are to employ the usual remedies, and particularly keep the person in a recumbent posture. Ammoniated tincture of valerian, or tincture of opium, are useful. But if the paroxysms be repeated, whatever their cause may be, we ought to deliver the woman, if the state of the os uteri will permit. We must be very careful to prevent hemorrhage, after the expulsion of the child.

ORDER 4. WITH CONVULSIONS.

Convulsions may occur, either during pregnancy or labour, and are of different kinds, requiring opposite treatment. One species is the consequence of great exhaustion, from excessive fatigue, tedious labour or profuse hemorrhage. This makes its attack without much warning, and generally alternates with deliquium, or great feeling of depression and debility; the muscles about the face and chest are chiefly affected, and the pulse is small, compressible, and frequent, the face pale, the eye sunk, the extremities cold. The fits succeed each other pretty quickly, and very soon terminate in a fatal syncope. This species naturally requires that we should, first of all, check the farther operation of the exciting cause, by restraining hemorrhage, or preventing every kind of exertion, and then husband the strength which remains, or recruit it by cordials. Opiates are of great service. Delivery is usually necessary.

Hysterical convulsions are more common during pregnancy than labour, and have already been noticed. I have only to say here, that the muscles of the trunk and extremities are affected to a greater degree than those of the face: there is an appearance of globus, often considerable palpitation, and occasionally a kind of crowing or screaming during the fit. At the termination of it there is usually wind discharged from the stomach, and often as the struggling is about to end, the bowels seem to be much inflated, and suddenly subside. Part of this, however, is a deception, for the spine is in such cases frequently bent back, so as to render the abdomen apparently more prominent. In the interval there is a tendency to laugh or cry, or sometimes a childish appearance. This kind of convulsion is rare in the parturient state. If the face be flushed, or there be headach, and suffusion of the eyes, venesection should be premised; and if this be not sufficient, then we give antispasmodics. If on the other hand there be no undue vascular action or determination to the head, we may at once give antispasmodics, such as tincture of valerian, or assafœtida; a smart clyster is also of great service. If these means fail, and the labour

be far advanced, it will be proper to employ the forceps, but in general artificial delivery is not required.

The most frequent species of puerperal convulsions, however, is of the nature of eclampsia, which occurs a hundred times for once that the others appear. Convulsions may affect the patient suddenly and severely. She rises to go to stool, and falls down convulsed; or, sitting in her chair, conversing with her attendants, her countenance suddenly alters, and she is seized with a fit; or, she has been lying in a sleep, and the nurse is all at once alarmed by the shaking of the bed, and the strong agitation of her patient. Immediately all is confusion and dismay, and the screams of the females announce that something very terrible has happened. Presently the convulsion ends in a short stupor, from which the woman awakes, unconscious of having been ill; and thus for a time, the apprehensions of the attendants are calmed. But in a short time the same scene is generally repeated; or, perhaps, although the convulsion have gone off, the stupor remains; and it is always more unfavourable when the patient continues insensible in the interval of the fits. It is, however, not unusual for the fit to be preceded by some symptoms, which, to an attentive observer, indicate its approach. These may even exist to a degree which cannot be neglected. They are, headach, which is sometimes dreadful; ringing in the ears; dazzling of the eyes, or appearance of substances floating before them, either opaque, or, more frequently, of a fiery brightness. In other cases, the first indication is violent pain in the stomach, with insupportable sickness, for, sometimes, the stomach is the first part which suffers from irritation of the origin of the nerves, and the patient may die before convulsions take place. The pulse usually is slow; the patient sometimes sighs deeply, or has violent rigours, which, in the second stage of labour, are always hazardous. There is great drowsiness during the pains. It is neither uncommon nor dangerous for the woman to be drowsy between the pains; but here, even during them, she falls into a deep sleep. When the attack comes on, which very often is soon after these preludes appear, the muscles are most violently convulsed; the whole frame shakes strongly,

and the face is dreadfully distorted,* and often swollen. The tongue is much agitated, and is very apt to be greatly injured by the teeth; foam issues from the mouth, and the convulsive inspiration often draws this in with a "hissing noise;" or she snores deeply, and cannot be roused during the fit. The skin becomes, during the convulsion, livid or purple. The pulse, during the whole of the disease, is often slow, but sometimes it does at last become frequent, small, and irregular. This attack may end at once in fatal apoplexy, but generally the patient recovers, and is quite insensible of having been ill. There may be only one fit; and without any interference, I have known the disease go off, and no return take place; but in general the attacks are repeated, and if they do not prove soon fatal, or are not averted by art, they recur with the regularity of labour pains, becoming more and more frequent as they continue. The woman appears to have no labour pains, yet the os uteri is affected, and sometimes the child is expelled, or if the patient become sensible in the intervals, and feel a pain coming on, it appears to be speedily carried off by a supervening convulsion. The fit may last only a few seconds, or may continue with very little remission for half an hour. In some instances the patient is not sensible of bearing the child, and is afterwards long of recollecting her delivery.

Convulsions may occur in any period of labour, or before it has begun, or after the delivery of the child; and in this last case, are sometimes preceded by great sickness or oppression of the stomach. Dr. Leak relates the case of a patient who had ten or eleven of these fits; the abdomen was swelled and tense, and she vomited phlegm mixed with blood, which probably came from the tongue. She recovered by means of blood-letting and clysters.

Puerperal convulsions are quite different from epilepsy, for they recur at no future time, except perhaps in a subsequent pregnancy. They take place in greater number in a given time, than epilepsy does in general, and belong to the genus Eclampsia of Sauvages, "artuum vel musculorum plurimorum spasmus clonicus acutus,

* Mr. Fynney gives a case, where the lower jaw was luxated during convulsions, which came on in the birth of a second child, or twin. Med. Comment. Vol. IX. p. 380.

cum sensuum obscuratione." This differs from his definition of epilepsy, by the absence of the character "periodicus;" and on the same principle Vogel simply defines it "epilepsia acuta." The principal difference, and one of a highly important nature in practice, is, that whilst the symptoms are the same in both diseases, they arise, in epilepsy, from some organic affection of the brain, or direct irritation of that organ; whilst, in eclampsia, they rather depend on some sympathetic and temporary cause. Hence, eclampsia may be produced by worms, by costiveness, indigestion, &c.; and occasionally, not only by the parturient condition of the uterus, but also by other affections of the same organ, in the virgin state. I have seen distinct cases of eclampsia, where the fits were very severe, and repeated, and accompanied, in the interval, with coma, or delirium, caused altogether by menstrual irritation, attended with severe pain in the hypogastrum and bearing-down sensation. In such cases venesection and purgatives give relief, and a blister on the head perfects the cure. Fomentations, or the hot bath, are also useful, but opiates are not to be given, at least at first. To return from this digression, puerperal convulsions often recur exactly like labour pains, or are frequently accompanied or preceded by them; though, when the convulsion comes on, the feeling of pain is suspended, and often, but not always, the uterine contraction is stopt or diminished.*(k)* The same observation applies to excessive rigours, which are indeed a species of convulsions, but are not attended with distortion of the face, nor insensibility. If the patient be in a state of stupor, she frequently has the countenance distorted at intervals, accompanied with some uterine action. They are never preceded by aura, and the patient usually recovers sensibility much sooner, and more completely during the intervals, than in epilepsy; at the same time there have been instances of the patient

(k) Dr. Clarke of London, thinking it necessary, in a case of convulsions, to turn the child and deliver it, a convulsion occurred whilst his hand was in the uterus, when, of course, he had an opportunity of observing how it was affected. —He remarked, that instead of a regular contraction taking place, the uterus seemed to flutter, or be irregularly and tremulously contracted and relaxed again quickly, and he was disposed to believe, that it was in that state during every case of puerperal convulsions.

remaining in a state of stupor for two days. The organs of sense, particularly the ear, are often preternaturally sensible. Sometimes the child is unexpectedly born during a fit.

Convulsions, of the kind I am considering, evidently are connected with gestation or parturition; they occur at no other time, and are more frequent in a first labour. They arise particularly from uterine irritation, but also seem frequently to be connected with a neglected state of the bowels, a fact to which I wish to call the attention of practitioners. It is a general opinion, that pregnancy produces plethora, and I do not mean here to dispute the fact, but distinctly to assert that we often confound the effects of excitement, with those of fulness; for in many instances, a powerful stimulus will produce the same consequences, in a spare and bloodless, that a smaller one would have done in a plethoric, habit. Is apoplexy confined entirely to the latter? There are, perhaps, few subjects more deserving of inquiry, than the effects of irritation of the extremities of the nerves supplying the abdominal viscera, on the basis of the encephalon and the spinal marrow.

There is nothing either more difficult, or more mysterious, in the etiology of puerperal convulsion, than of chorea, or stupor, or apoplexy, or insupportable feeling of fulness in the head, from stomachic or intestinal irritation, connected with costiveness, worms, bile, or unhealthy action of the alimentary canal. If practical observers know that these causes do produce often such effects, where is the ground of surprise, that uterine irritation, especially when associated with irritation of the bowels, arising from long neglect, should produce tetanic, spasmodic, or even apoplectic affections, during labour? This sympathetic irritation is almost invariably accompanied by an affection of the vascular system, productive of great determination to the head, which aggravates the evil, and becomes, indeed, the chief source of danger.* I shall not, however, enter farther into the theory, but state the practice, which is of more consequence. The first object is, to prevent the patient

* It has been supposed by Mr. Power, that convulsions depend on a translation of, what he calls the parturient energy, from the uterus to the brain, or that there is a metastasis of action.

from injuring the tongue, by inserting a piece of cork or wood into the mouth; this occupies no time. Next, we bleed the patient, and must not spare the lancet. All our best practitioners are agreed in this, whatever their sentiments may be with regard to the nature of the disease, or to other circumstances. We must bleed once and again, whether the convulsions occur during gestation or pregnancy.* There is more danger from taking too little blood, than from copious evacuation. Often, in a short time, several pounds of blood have been taken away with ultimate advantage. Blood-letting also tends to relax the os uteri. The quantity to be taken away must depend on the severity and obstinacy of the symptoms. We never ought to take away more than is required for relief; nor on the other hand, are we to stop prematurely. It is desirable to procure the discharge as speedily, and in as full stream, as possible; but it is not essential, that it be taken from the jugular vein, nor is that often safe or practicable.*(l)* I have, when treating of the diseases of pregnancy, observed, that in many cases, affections, arising evidently by sympathy from a state of irritation of some of the abdominal viscera, might require venesection for their removal; or, if this were neglected, and the disease treated merely by purgatives, protracted illness, or immediate danger, might result. Nothing can illustrate this principle better than the present disease, which requires instant, and generally a copious loss of blood, the mere removal of the irritation, which excited the inordinate action of the nervous and sanguiniferous system, not being sufficient for the cure. Next, we administer a smart clyster,

* La Motte mentions a case, 222, where a woman, in the last five months of pregnancy, was bled eighty-six times. Sometimes 2 oz. would relieve her.—By modern practitioners, from 40 to 80 oz. have been taken with advantage, in a case of puerperal convulsions. Puzos insists on the necessity of copious blood-letting and speedy delivery. This practice is adopted by the most judicious of the present day.

(*l*) Where this cannot be conveniently accomplished, we should detract blood very freely by cupping from the temples and back part of the neck. I have more than once been witness to the best effects resulting from this practice, and therefore must here strongly recommend it.

which, if given early in the precursory stage, is of itself sometimes sufficient to arrest the progress of the disease. A smart dose of calomel, or solution of salts, may also be given with advantage, when the person can swallow, especially if the convulsions have occurred during pregnancy, with little tendency to labour. We must also attend to the bladder, that it be emptied, for its distension alone has sometimes brought on convulsions.*

One part of practice, then, and a most important and essential one, too, consists in depletion, by which the risk of fatal oppression of the brain, or extravasation of blood within the skull, is diminished, and the convulsions mitigated. But this is not all; for the patient is suffering from a disease connected with the state of the uterus, and the state is got rid of by terminating the labour. Even when convulsions take place very early in labour, the os uteri is generally opened to a certain degree, and the detraction of blood, which has been resorted to on the first attack of the disease, renders the os uteri usually lax and dilatable. In this case, although we have no distinct labour pains, we must introduce the hand, and slowly dilate it, and deliver the child. I entirely agree with those who are against forcibly opening the os uteri;† but I also agree with those who advise the woman to be delivered as soon as we possibly can do it without violence.‡ There is, I am convinced, no

* La Motte, 223, 224.—Leake relates a case where it produced *subsultus tendinum*, and excessive pain at the pubis. Vol. II. p. 344.

† Dr. Bland is rather against delivery, and for trusting to nature. Dr. Garthshore, Jour. VIII. 359, says, more women have recovered of this, who were not delivered, than of those who were violently delivered.—Dr. Denman concludes, that women, in the beginning of labour, ought not to be delivered, II. 381, and admits of it only when it can be done easily.—Baudelocque says, that we ought not to be in haste to deliver, and never to do it when nature seems to be disposed to do it herself. Dr. Hull, Obs. &c. p. 245, says, that we should trust to the usual remedies, till the os uteri be easily dilatable, or be dilated, and then deliver. He informs me, that in every case which proved fatal, there was no dilatation of the os uteri. Gardien is disposed to limit the propriety of delivery to those casas, where there is great sensibility of the os uteri, with pain at the external parts. Traité, Tome II. p. 424.

‡ Dr. Osborn, p. 50, says, that no remedy can be used with any reasonable expectation of benefit, till delivery is completed; and that therefore it is our indispensable duty to effect it in the quickest possible manner.—Dr. J. Hamilton,

rule of practice more plain or beneficial,* when evacuations fail to check the convulsions. It not only removes an original cause, but also puts a stop to that renewed aggravation of symptoms, which attends on every pain or effort, whether it be called parturient or convulsive. Delivery does not, indeed, always save the patient, or even prevent the occurrence of the fits, but it does not thence follow that it ought not to be adopted. I look upon it as indispensable, if the convulsions are not checked by venesection. When the os uteri is rigid, the hip-bath and emollient vaginal injections have been recommended, but they are useless as well as troublesome. The application of extract of belladona has been proposed for removing rigidity, but of this I have no experience, and believe that if venesection do not produce relaxation, nothing else can. In obstinate rigidity the os uteri has been cut with advantage. In almost every instance the forceps are applicable, and turning is rarely required. Indeed, if the water has been evacuated, it is very questionable how far the irritation attending it would be safe.

Internal remedies have been advised, such as opium, and musk, and camphor; but experience does not establish the utility of the two last, and the first is highly dangerous, tending to convert the disease into fatal apoplexy. If in any case it be admissible, copious venesection must precede it, and the bowels must have been opened. In general it is to be strictly avoided, as the most fatal agent which can be employed, and is only admissible when there is acute and obstinate pain in the head or stomach, which has resisted the lancet, and the application of a sinapism to the part.

The practice, then, which may be deduced from the view I entertain of the nature and causes of puerperal convulsions, and which independently of all theory, comes recommended by experience, is, first, to detract blood; second, to remove intestinal irritation by

Annals, V. 318. et seq. says, that when convulsions occur during labour, delivery is to be accomplished as soon as possible.—Dr. Leake, that when they seem to proceed from the uterus, speedy delivery is useful; but when from "any cause independent of the state of pregnancy," delivery would be hurtful, II. 348.

* Even evacuating the liquor amnii has, M. Baudelocque admits, been of service, § 1118. In one case the os uteri was hard and callous, it was divided, the child speedily born, and the woman immediately became calm, 1120.

clysters, and afterwards by purgatives, which, although they may not immediately, yet will ultimately produce beneficial effects; third, to get rid of the uterine action, by accomplishing delivery, when that can be done, without much irritation; fourth, to avoid every thing which can excite the nervous and vascular system, such as cordials and opium.

If the fits have been only apprehended, but have not taken place, then we may use remedies as preventives. The most beneficial treatment is, to empty the vessels and the bowels. When there are evident symptoms of disordered stomach, a gentle emetic has been advised; but I have never seen it administered myself, and am, from its effects on the head, not partial to its exhibition. When a violent pain in the stomach takes place, we should bleed, and if it shall continue after that, give an opiate. I wish it to be carefully remembered, that when we have headach, or any other symptoms indicating a tendency to convulsions, the lancet is necessary. Blood-letting can seldom do harm, it may do much good; and if this book serve only to impress that fact on the mind of one reader, I will not regret having written it.

When symptoms of nervous irritation exist, without any determination to the head or fulness of vessels, then, after bleeding, opiates may be of advantage.* Camphor has been strongly recommended by Dr. Hamilton,(*m*) as the most powerful internal re-

* Opiates have been strongly recommended by some practitioners, particularly Dr. Bland. Journ. Vol. II. p. 328, &c.—Dr. Hamilton as strongly prohibits them. Annals of Med. Vol. V.—Petit says, they kill both the mother and the child.

(*m*) Dr. Hamilton in an interesting paper on puerperal convulsions, which he terms Eclampsia, [in Annals of Medicine for 1800,] says, that no patient to whose assistance he had been called, who had taken a dose of opium previously to his arrival, had ever recovered. Camphor he strongly recommends, and gives it in doses of from 5 to 10 grains, frequently repeated; he says that every patient to whom it was possible to give it, recovered.—The Digitalis he also used with advantage in those cases where œdema existed.

This mode of treating the disease has proved so successful in his hands, that, in the paper above referred to, which is well worthy of perusal, he states, that in 15 months immediately preceding its publication, he had attended twelve cases of the disease, where the fits had occured previously to his being sent for; and although in more than a majority of them, every symptom deemed unfa-

medy which can be prescribed; but I cannot, from my own observation, say much respecting its virtues as a preventive. But when convulsions have continued after delivery, or when the recovery was not complete, I have found it of service, and recommend it to be always tried. In these circumstances, it is always proper to blister and shave the head.

If convulsions take place after the delivery of the child, for the first time, then the placenta, if it have not come away, is immediately to be extracted; and if the pulse do not expressly forbid it, a vein is to be opened, and afterwards, the bowels purged. If the practice be prompt and vigorous, the generality of patients recover from puerperal convulsions.

Those who have had convulsions during labour, ought in a succeeding pregnancy to pay the utmost attention to the bowels, avoid a regimen which induces plethora, and lose blood once or twice; when labour commences, a clyster should be given, and the patient bled on the slightest feeling of uneasiness in the head.

Apoplexy may take place, at the commencement of labour, or during gestation, without convulsions. In the latter term, the os uteri is rarely affected; but, in a few instances, if death did not take place immediately, it has been found to dilate a little. The practice, in either case, is much the same, and differs in nothing from that to be followed at other times. The chief resource is the lancet. The child claims our attention in this disease. If it occur during labour, and death be evidently approaching, the delivery ought to be promoted as soon as possible, by turning or the forceps, in order to preserve the child. If it occur in the end of pregnancy, the cæsarean operation should be performed immediately after death, or with a better chance, before it, for the mother cannot suffer in such circumstances, being moribund.

ORDER 5. WITH RUPTURE OF THE UTERUS.

The uterus may be lacerated during labour, under different cir-

vourable concurred, yet every patient recovered.—This is certainly a favourable result, for Mauriceau relates 21 cases of the disease, 13 of which died. Giffard mentions 4 cases, 2 of which perished.

cumstances, and from various causes. Any part of it may be torn, but generally the rupture takes place in the cervix, and the wound is transverse. Sometimes the uterus is entire, and the vagina alone is torn. It may happen during any stage of labour, and even before the membranes burst,* but this is uncommon. It may take place when the head has fully entered the pelvis, or in the moment when the child is delivered.†

The uterus may be ruptured, by attempts rashly made to turn the child;‡ or, after the water has been long evacuated, some projecting part of the child may so affect a portion of the uterus, as to make it tear. A certain set of fibres may also be suddenly and spasmodically contracted, and laceration may thus take place. In these cases, there is often very little warning, and the accident may happen when we are just in expectation of a happy termination of the labour.*(n)* In a case detailed by Dr. Douglas, (p. 50.) the head of the child was resting on the perineum, when the lady, who had been subject to cramp, uttered a violent cry, and the head receded. The child was delivered, but the patient died. Mr. Goldson's patient complained of cramp in the leg, in the intervals of the labour pains; and in the instant when the rupture happened, she exclaimed "the cramp!" Dr. Monro's patient (Works, p. 677.) was sitting in a chair, when she suddenly screamed, and the uterus was lacerated; she was not delivered, but lived from Tuesday till Friday. Rigidity of the os uteri may also be a cause of laceration.§ It dilates very slowly, requires great exertion of the uterine fibres, and the patient suffers much pain. The uterus may at

* Vide Mem. of Med. Soc. Vol. II. p. 118.

† In a case which I saw, the placenta was retained by a spasmodic stricture, though the child was expelled; every allowable attempt was made to extract it, but in vain. The uterus acted from the os uteri towards the rent, which was at the fundus. The woman died. The placenta was found still in utero. The intestines were inflamed. See also Crantz, de Utero Rupto, p. 22; and Dr. Cathral's case in Med. Facts, Vol. VIII. p. 146.

‡ A fatal case of this kind is related to Mr. Dease.—One more fortunate in the issue, is inserted in Mem. of Med. Soc. Vol. IV. p. 253.

(n) Vide a case by the Editor, inserted in the New York Medical Repository for 1804. Hexade 2, Vol. I.

§ Perfect's Cases, Vol. II. p. 459.—Hamilton's Cases, p. 138.

last be torn, even although the head has partly descended into the pelvis, and the pelvis be large. In this case the liquor amnii has been discharged before the rupture takes place. The most frequent cause, however, of this accident, is a disproportion between the size of the head and the capacity of the pelvis, by which a portion of the cervix uteri is pinched between the head and the pelvis, and fixed so, that the action of the uterus is directed against this spot, rather than the os uteri. The woman feels very severe pain, either in the back or at the pubis, which, during the action of the uterus, augments to an extraordinary degree, and then the part gives way. Another way in which the cervix may be lacerated, is by the linea iliopectinea being so sharp,* that when the uterus is pressed against it, the parts are either cut through, or so much acted on, that they are in a manner killed, and give way, having a sphacelated appearance. In some cases the rectum, but much more frequently the bladder, is opened. Preternatural presentations, from the obstacle afforded to delivery, becomes also a cause of rupture.

Now, from this view we learn, that those women are most liable to rupture of the uterus, who are very irritable, and subject to cramp; or who have the pelvis contracted, or its brim very sharp; or who have the os uteri very rigid, or any part of the womb indurated. Scholzius relates a case, where it was produced by scirrhus of the fundus; and Friedus one, where it was owing to a carneo-cartilaginous state of the os uteri.*(o)* Sometimes the uterus seems to be predisposed to this accident, by a fall or bruise. Reidlinus relates one instance of this. Behling, Steidle, and Perfect, furnish us each with another. Salmuthus considers a thinness of the uterus as a predisposing cause of rupture; and Dr. Ross† relates a case where it seemed to have this effect, the

* In a case of this kind, the line was on one side, as sharp as a fruit knife, and a cartilaginous knob projected from the symphysis. The bladder was torn.

(o) See also a case of similar nature by Dr. M. Anthony. Eclectic Repertory, Vol. IV. p. 496.

† Annals of Med. Vol. III. p. 277.

womb not being above the eighth part of an inch thick, and tearing like paper.

We are led to anticipate laceration, when the patient is restless, and complains of very severe local pain, subject to great exacerbation, and attended with a very acute or tearing sensation. The pains are violent and frequent, and usually do not produce a great effect on the os uteri, which is often very rigid. These symptoms are still more alarming, if the liquor amnii have been fully evacuated. The treatment to be followed, must depend on the apparent cause; rigidity, is to be overcome by venesection; spasmodic action, by an opiate clyster; change of structure of the os uteri, may demand consideration, how far incision may be proper; malposition of the child must be rectified; and, finally, when the pelvis is contracted, and there is any symptom, indicating the risk of laceration taking place, the forceps are instantly to be employed; or, when such symptoms exist, in any case where the forceps are applicable, it would be criminal to delay.

When this accident does happen, the woman feels something give way within her, and usually suffers, at that time, an increase of the pain. The presentation disappears more or less speedily, unless the head have fully entered the pelvis, or the uterus contract spasmodically on part of the child, as happened in Behling's patient.* The pains go off as soon as the child passes through the rent into the abdomen; or, if the presentation be fixed in the pelvis, they become irregular, and gradually decline. The passage of the child into the abdominal cavity is attended with a sensation of strong motion of the belly, and is sometimes productive of convulsions. The shape of the child can be felt pretty distinctly through the abdominal coverings.

The patient, after this accident, soon begins to vomit a dark coloured fluid, the countenance becomes ghastly, the pulse small and feeble, the breathing is oppressed, and frequently the patient cannot lie down. Sometimes the intestine protrudes through the wound in the uterus, and has even been strangulated in it. These symptoms do not all appear in every case, nor come on always

* Haller's Disput. Tom. III. p. 477.

with the same rapidity. In Dr. Ross's patient, although the child escaped through a rent in the vagina into the cavity of the abdomen, and though the nature of the case was ascertained, yet no hemorrhage, fainting, nor bad symptoms took place; and the child being delivered, the woman recovered.*(p)*

If the patient be not speedily relieved, she becomes very restless, tosses in the bed, and vomits frequently; complains of a pain in the belly, which becomes swelled, the pulse is rapid, the extremities become cold, and the strength sinks. In every case that I have seen, the intestines were chiefly affected, being much inflamed. The interval which elapses between the accident and death, is various; but generally, whether the patient be delivered or not, she dies within twenty-four hours, often in a much shorter time. Steidele, however, relates a case, where the patient lived till the twelfth day; Dr. Garthshore's patient lived till the twenty-sixth day; and in the Coll. Soc. Havn. Vol. II. p. 326. there is the case of a woman, who after being delivered, lingered for three months.

Different opinions have been held respecting the best mode of treatment. Some have advised the performance of the cæsarean operation, some delivering *per vias naturales*, and others leaving the case to nature. We have instances of all these methods being successful; but the delivery, by turning the child, has advantages over the other modes, and certainly ought, with scarcely any exception, to be resorted to. When the os uteri is dilated before the accident takes place, as is usually the case, and the hand can, without much difficulty, be introduced, it is to be passed through the os uteri, and the rent in the uterus, into the abdominal cavity, in search of the child's feet, which are to be brought down, and the case managed in the same way as in presentation of the feet. When the placenta is extracted, we are to introduce the hand again, to ascertain that no part of the intestines have protruded through

(*p*) Dr. Douglass' patient recovered after the delivery of the child. Mr. Haden's patient also recovered, after rupture of the uterus. Vide Med. and Chirurgical Transactions, Vol. p. 184, seq. In a case that occurred to the editor, the woman lived near four days after delivery, and gave flattering hopes of recovery, but unhappily not realized.

the wound. This process is usually easy, when the rent is in the cervix uteri or the vagina. When it is higher, there is often great difficulty, owing to the contraction of the uterus; which may be affected spasmodically, or may have universally contracted, and the rent become very small. It sometimes happens, that when attempts are made to carry the hand through the cavity of the uterus to the rent, the fibres contract over the hand, and the contraction may be felt sweeping toward the rent, so as to carry, as it were, the uterus off the hand. It would be both cruel and useless to attempt delivery in such a case.

When the os uteri is rigid and very little dilated before the accident happens, and cannot be opened without extreme irritation, which is, indeed, rather a state which may be supposed, than actually met with; or when the uterus is spasmodically and violently contracted between the rent and the os uteri, which I know is apt to happen, if the fundus be lacerated, I consider attempts to deliver as adding to the danger. These cases are only rare, because the rupture is generally in the cervix; for when the body, or fundus, is torn, the contraction is often strong; and, although there be doubtless instances of delivery being accomplished with facility some hours after the rupture, yet, in most cases, such contraction soon takes place, as must altogether prevent it, or render it highly dangerous. It may also happen, that deformity of the pelvis prevents delivery. In such circumstances, we must either perform the cæsarean operation, or leave the case to nature. If we have been called early, when the child is yet alive, and before the abdominal viscera have been much irritated by the presence of the fœtus, we are warranted to extract the child by a small incision.* If many hours, however, have elapsed, then such irritation is often produced, as renders it doubtful if the additional in-

* Vide successful case by Thibault, in Jour. de Med. for May 1768.—M. Baudelocque relates a case where the operation was twice performed on the same patient, for the same cause. In Essays Phys. and Lit. Vol. II. p. 370, is a case most incredible, where both the uterus and abdominal integuments were torn during labour. The child escaped, and the woman recovered. A case is related lately in one of the French Journals, where the cæsarean operation was performed twelve hours after the rupture, with success.

jury of the operation could be sustained. On the other hand, if little irritation be yet excited, and the woman is tolerably well, there is room, it may be said, to hope, that a natural cure may be accomplished, as in extra-uterine pregnancy; and therefore, as the child cannot be saved now, it may be argued that it is more prudent to trust to nature.* Even in this case, I am inclined to extract by a small incision, which I conceive to be less dangerous than by the rent, when such a time has elapsed, as must have rendered the uterus very tender and easily irritated. Another risk arises from the extravasation of blood into the abdomen, early exciting inflammation; and it has been proposed by M. Deneux and others to evacuate the blood by an aperture.

The cases which admit most easily of delivery, are those where the rent is situated in the cervix uteri or vagina; and laceration of the vagina is less dangerous than rupture of the uterus,† provided

* Astruc. liv. v. chap. iv. quotes a case where the child remained in the abdomen for 25 years. In another case, the midwife felt the child's head, but after a severe pain it disappeared, and the woman complained only of a weight in the belly. It was expelled by abscess. His. de la Societé de Med. Tom. I. p. 388, In Dr. Bayle's case, the child was retained 20 years. Phil. Trans. No. 139, p. 997. In Mr. Birbeck's case, the child was discharged by the navel. Phil. Trans. Vol. XXII. p. 1000. Bromfield's patient did not get rid of the child, but she lived for many years, and after her death the rent was visible. Phil. Trans. Vol. XLI. p. 696. In Dr. Sym's patient, the process for expelling the child by abscess was in a favourable train, when, by imprudent exertion, fatal inflammation was excited. Med. Facts, Vol. VIII. p. 150. Bartholin also gives cases. Le Dran relates an instance where the uterus was ruptured on the 23d of April. On the 13th of Mny the placenta was expelled; on the 16th a tumour appeared at the linea alba, which was opened, and a child extracted; the woman recovered. Obs. Tom. II. ob. 92.

† In a case communicated to Dr. Hunter, the forceps were pushed through the cervix uteri, and the intervening portion between the laceration and the os uteri was afterwards cut. The labour was finished naturally, and the woman recovered. Med. Jour. Vol. VIII. p. 368. Dr. Douglas relates the successful case of Mrs. Manning, in his Observations, p. 6. Dr. A. Hamilton gives a fortunate case, where delivery saved the mother. Outlines, p. 384; and Dr. J. Hamilton, relates one in his Cases, p. 138, where the rent had contracted so much, as to give some difficulty to the delivery. The case is instructive. In the case of E. Dwyer, related by Dr. Labat (Dub. Trans.) recovery took place, but, in the next pregnancy, the same accident occurred and proved fatal. In the 2d vol. of the Trans. of the Coll. of Phys. in Dublin, p. 15. Dr. Frizel gives the case of Bridget Fagan

the bladder be not injured. I do not think it necessary to make any further remarks on the laceration of the vagina, as distinct from that of the womb, except to say, that delivery may be practised after a greater lapse of time, than when the uterus is torn; for the vagina does not contract.

When the head is engaged in the pelvis, and cannot recede after the womb is torn, we have other symptoms, indicating rupture of the uterus, or at least the necessity of using instruments. The strength sinks, the pains become useless or go off, the patient vomits, &c.

When, from precursory symptoms, we expect that laceration is about to take place, we must accelerate labour, generally by the use of instruments. This is more necessary if the patient have formerly had the uterus torn. Turning must be dangerous, in such circumstances, after the water has been evacuated, and before that, there can seldom be any indication of danger. It has been calculated that rupture takes place, once in 940 cases.

ORDER 6. WITH SUPPRESSION OF URINE.

Suppression of urine may take place during labour, in consequence of the head of the child being locked in the pelvis; or

who had the uterus ruptured in consequence of the child presenting the arm. With great difficulty, and aided by the crotchet fixed in the foot of the child, he succeeded in turning and delivering it, when he found the uterus extensively ruptured at its cervix, and the intestines protruding. He replaced the bowels, and thinks he prevented a reprotrusion by making one edge of the rent overlap the other. She recovered.

M. Coffiners gives a memoir on this subject, in the Recueil Period. Tom. VI. in which he remarks, that laceration near the vulva is easily cured; at the upper lateral part of the vagina, it is dangerous; and at the anterior and posterior part, near the bladder and rectum, it is generally mortal: but in one case the woman recovered, although the hand could be introduced into the bladder. The woman had incontinence of urine afterwards. In his eighth case, the child lay transversely and the vagina was torn, and filled with clots; but the peritoneum was still entire, and therefore the wound did not enter the abdomen. The uterus was supported with a napkin until the child was turned. Dangerous symptoms supervened, but the woman recovered. He gives fifteen cases, and of these six recovered. Several were produced by attempts to reduce the arm of the child.

from a kind of paralytic state of the bladder, produced by long retention of the urine; or by a small stone, or quantity of mucus, obstructing the urethra. It produces tenderness, and great pain, in the hypogastric region, which is also swelled. The pain is constant, but is increased during every effort of the abdominal muscles to bear down, because then the bladder is pressed. It is injurious in so far as it tends to impair the uterine action, and it is dangerous on account of the risk of the distended bladder being ruptured by the contraction of the abdominal muscles, or its giving way by a gangrenous rent. The bad symptoms consequent to this event do not always come on instantaneously, and sometimes the bladder still retains a little urine. In a case related by Mr. Hey, in the fourth volume of Medical Observations and Inquiries, they did not take place till the second day. The patient was thirsty, vomited, had a frequent desire to void the urine, which she did very suddenly, but not more than a tea cup full at once. The pulse was quick, the belly swelled, and pressure gave her pain. She died about the eighth day, and the bladder was found to be ruptured at its upper part.

When the urine cannot be passed by the voluntary efforts of the woman, aided sometimes by pressing up the head of the child, the catheter must be introduced. The perforations of the instrument, however, ought to be large, as a slimy tough mucus in the urethra, sometimes fills completely those of the ordinary size. If the head should be so jammed in the pelvis, as to prevent the introduction of the catheter, which is rare, the woman must be delivered.*(q)*

In some cases, although no water be made for a long time, yet no inconvenience is felt; and when the catheter is introduced, very little water is evacuated. This depends upon a diminished secretion; and although, of itself, it cannot determine us to accelerate delivery, yet, should it be attended with other bad symptoms in tedious labour, it may form and additional argument for inter-

(q) An interesting case of this nature, is related by Dr. Merriman, in Edinburgh Med. & Phys. Journal for 1810, and in Eclectic Repertory, Vol. I. p. 269, & seq.

fering, as then the functions are becoming impaired, and effusion may take place into some of the cavities.

There are some other complications, which might perhaps be made the subject of distinct orders; such as the existence of aneurism, hernia, &c. &c. but these may more properly be referred to the head of causes requiring the use of instrumental aid. It ought to be a general rule, and it is a very clear one, that whenever a disease exists, which may be much or dangerously aggravated by a continuance of the efforts of labour, that process ought to be shortened, as much as possible.

THE

PRINCIPLES

OF

MIDWIFERY.

BOOK III.

OF THE PUERPERAL STATE.

CHAP. I.

Of the Treatment after Delivery.

Immediately after the placenta is expelled, the finger ought to be introduced into the vagina, to ascertain that the perineum or recto-vaginal septum be not torn, and that the uterus be not inverted.

Then, if the woman be not much fatigued, she is to turn slowly on her back, and a broad bandage is to be slipped under her, which is to be spread evenly, and pinned so tightly round the abdomen, as to give a feeling of agreeable support. This bandage is made of linen or cotton cloth; and it is usual to place a compress over the uterus, to assist contraction. In some, if not in many cases, this might be dispensed with, as we see in a state of nature; but in general, in civilized life, it is useful, if not absolutely necessary. For the abdominal muscles do not readily contract, so as to afford a support to the parts within, and syncope, breathlessness, or other unpleasant effects, may be the consequence. The wet sheet is also to be pulled from below her, and an open flannel petticoat is to be put on; it has a broad top-band, and is introduced and pinned like the bandage. A warm napkin

is then to be applied to the vulva, and the woman laid in an easy posture, having just so many bed-clothes as make her comfortable. If she desire it, she may now have a little panado, after which we leave her to rest. But before retiring, it is proper to ascertain that the bandage be felt agreeably tight, that there be no considerable hemorrhage, and that the after-pains are not coming on severely. It is also proper to mark the state of the pulse, and to leave strict directions with the nurse, that every exertion, and all stimulants be avoided.

Having thus simply stated what appears to be necessary, I must next say what ought to be avoided. It is customary with many nurses, to shift the patient completely, and, for this purpose, to raise her to an erect posture. Now this practice may not always be followed by bad consequences, but it is very reprehensible; for the patient is thus much fatigued, and if she sit up even for a short time, hemorrhage or syncope may be produced. The pretext for this is generally to make the patient comfortable; and, indeed, if the clothes be wet with perspiration or discharge, there may be some inducement to shift her. But this ought to be done slowly, without raising her, and if she have been fatigued, not until she have rested for a little. Another bad practice is, the administration of stimulants, such as brandy, wine, or cordial waters. I do not deny, that these, in certain cases of exhaustion, are salutary; but I certainly maintain, that generally they are both unnecessary and hurtful, tending to prevent sleep, to promote hemorrhage, and excite fever and inflammation. A third practice, no less injurious, is, keeping the room warm with a fire, drawing the bed-curtains close, increasing the bed-clothes, and giving every thing warm to promote perspiration. This is apt to produce debility, and many hysterical affections, as well as a troublesome species of fever, which it is often difficult to remove. It also renders the patient very susceptible of cold, and a shivering fit is very readily excited. Lastly, gossiping and noise of every kind, is hurtful, by preventing rest, occasioning headach or palpitation, as well as other bad symptoms.

At our next visit, which ought to be within twelve hours after delivery, we should inquire whether the patient have slept, and

ascertain that the pulse be not frequent, that the after-pains have not been severe, nor the discharge copious. We should also particularly inquire if she have made water; and if she have not, but have a desire to do so without the power, a cloth dipped in warm water, and wrung prettry dry, should be applied to the pubis. If this fail, the urine will often be voided if the uterus be gently raised a little with the finger, or the catheter may be introduced. There are two states in which we are very solicitous that the urine be voided; the first is, when the patient has much pain in the lower belly, with a desire to void urine; the second is, after severe or instrumental labour.

A stool should be procured within twenty-four or thirty-six hours after delivery, either by means of a clyster or a gentle laxative. If the patient usually have the milk-fever smartly, or the breasts are disposed to be painful and tense, a mild dose of some saline laxative is better than a clyster. But if she be delicate, and have formerly had little milk, a clyster is to be preferred. If she is not to suckle the child, then the laxative should be rather brisker, and may be repeated at the interval of two days.

After delivery, there is a discharge of sanguineous fluid from the uterus for some days, which then becomes greenish, and lastly pale, and decreases in quantity, disappearing altogether within a month, and often in a shorter time. This is called the lochial discharge. During this time, it is necessary that the vaginal and external parts be daily washed with tepid milk and water.

During the latter end of gestation, milk is generally secreted in a small quantity in the breasts, and sometimes it even runs from the nipples. After delivery the secretion increases, and about the third day the breasts will be found considerably distended. Many women, indeed, complain at this time of much tension and uneasiness, and there is usually some acceleration of the pulse. A pretty smart fever may even be induced, which is called the milk-fever. The best way to prevent these symptoms from becoming troublesome, is to keep the bowels open, and apply the child to the breasts before they have become distended. This may generally be done twelve hours after delivery.

The diet of women in the puerperal state ought to be light; and if they are not to give suck, liquids should be avoided, the food must be of the dry kind, and thirst should be quenched, rather with fruit than with drink. If they are to nurse, the diet for the first two days should consist of tea and cold toasted bread for breakfast, beef or chicken soup for dinner, and panado for supper; toast water, or barley water, may be given for drink, but malt liquor should be avoided. Unless the patient be feeble, and at the same time have no fever, wine should not be allowed for the first two days; a little may then be added to the panado or sago, which is taken for supper; and a small glass diluted with water, may be taken after dinner. A bit of chicken may be given for dinner, and in proportion as recovery goes on, the usual diet is to be returned to.

The time at which the patient should be allowed to rise, to have the bed made, must be regulated by her strength and other circumstances. It ought never to be earlier than the third day, and, in a day or two longer, she may be allowed to be dressed, and sit a little; but even in the best recovery, and during summer, the woman ought not to leave her room within a week. She ought not to go out for an airing, in general, till the third week. In cold weather, and when the patient is delicate, she must be longer confined. By rising too soon, and making exertion, a prolapsus uteri may be occasioned, and still more frequently the lochia are rendered profuse, and the strength impaired. If there be, or have formerly been, the smallest tendency to prolapsus, it is absolutely necessary to keep the patient very much for some time in a recumbent posture, on a sofa, avoiding, however, that degree of heat which relaxes the system. It is also necessary in this case to stimulate the uterine lymphatics to absorption by a smart purgative once in the three or four days, to bathe the external parts with rose water, having a third part of spirits added to it, and at the end of a fortnight begin a tonic, mixed with a mild diuretic.

CHAP. II.

Of Uterine Hemorrhage.

In natural labour, after the expulsion of the child, the uterus contracts so much as to loosen the attachment of the placenta and membranes to its surface, and afterwards to expel them. This process is always accompanied by the discharge of blood, but the quantity in general is small. If, however, the uterine fibres should not duly contract after the delivery of the child, so as to diminish the diameter of the vessels, and at the same time accommodate the size of the womb to the substance which still remains within it; then, provided the placenta and membranes be wholly or in part separated, the vessels which passed from the uterus to the ovum, shall be open and unsupported, and will pour out blood with an impetuosity proportioned to their size and the force of the circulation. This flow will continue until syncope check it, a state too often only the prelude to death.

It is evident that the cause of flooding is the torpor of the uterus.* The fibres may become inactive, or have their tonic contraction impaired immediately after the pain which expels the child. This will more especially happen if the woman be weakly, if the labour have been tedious, and the child at last expelled suddenly by a strong, but perhaps only momentary contraction.

The hemorrhage, therefore, appears very soon after delivery, and before the placenta has come away. It is profuse, and produces the usual effects of hemorrhage on the system, and these effects are greater and more speedy than those which follow from hemorrhage before delivery, for the loss is instant and extensive. The first gush indeed does not produce great debility, because it

* When the uterus contracts properly after the delivery of the child, it will be felt, if the hand be applied on the abdomen, like a hard and solid mass; but when torpid, it is not so distinctly felt, for it is softer, being destitute of tonic contraction.

consists chiefly of blood, which formerly circulated in the uterus, and is not taken directly from the general system; and the separation of the placenta not being wholly effected at once, the loss at first is more slow. But immediately after this, the effect appears in all its danger; and it is not unusual for the woman, if not assisted, to die within ten minutes after the birth of the child.*

If flooding occur after delivery, the woman says there is surely an unusual discharge; and, on examining, it is found to be really so; but at first the pulse is pretty good, and the countenance is not much altered. In a minute, perhaps, the pulse sinks, the face becomes pale, the hands cold, the respiration is performed with a sigh, or after lying quiet for a little, a long sigh is fetched, and the patient seems as if trying to awake from a slumber. She exclaims she is sick, and immediately vomits; she throws out her arms, turns off the bed-clothes, and seems anxious for breath; she complains of cold, or perhaps is restless, and begs not to be disturbed; or lies in a state approaching to syncope, or gazes wildly around her, and is extremely restless, breathes with difficulty, and quickly expires. The danger of flooding is universally known, and the con-

* The patient may die speedily after the birth of the child, in consequence of other causes, some of which it may not be improper to notice. Sudden death may proceed from an organic affection of the heart, such as ossification of the valves or arteries, dilatation of the cavities of the heart, or aneurism of the aorta. The effect of any sudden change in the system, in these cases, must be known to every practitioner. Whenever we suspect such disease, the most perfect rest must be observed after delivery. Should there be any inequality in the size of the two ventricles, the right being larger, for instance, than the left, then any cause capable of hurrying the circulation, may make both sides contract to their utmost, the consequence of which is, that all the blood in the right side is thrown out, but it cannot be received into the left: rupture of the pulmonary vessels must take place, and I have known many instances where the patient was immediately suffocated. Speedy death may also arise from the brain becoming affected in a way similar to that which takes place in puerperal convulsion. In this case, the first symptom is pain of the stomach, and the patient may die before any farther effect is produced. Great difficulty of breathing, and most alarming, if not fatal syncope may take place, from the mere emptying of the uterus, if an adequate support have not been given, as we also sometimes see after tapping for dropsy. In this case, even when due attention was paid to the application of a bandage, I have seen gasping and alarming weakness produced. The best remedy is an opiate in such a case, with a little warm wine or brandy.

sternation excited by it, is in many cases great. One exclaims the patient is dead, and another she is dying, one is wringing her hands, another running for cordials, and it requires no small steadiness and composure in the practitioner to prevent mischievous interference, or procure necessary aid.

The torpor of the uterus is sometimes so universal, that when the hand is introduced, it passes almost up to the stomach. But generally a circular band of fibres contracts spasmodically about the middle of the uterus, inclosing the placenta above it, whilst the rest of the fibres become relaxed. This has not inaptly been called the hour-glass uterus; and if I did not know the hazard of establishing a general rule, I would say, that in almost every instance, this contraction takes place. I have scarcely ever introduced the hand into the uterus in a case of flooding, without meeting with it, whether the placenta had or had not been expelled. When it is not present or recognised, I must suspect that it is owing to an almost moribund state of the womb, and must be a very bad symptom.

From this view it is evident, that flooding is to be prevented by preserving the action of the uterus, and avoiding whatever can increase the force of the circulation. A powerful means of keeping up the action of the womb, consists in preventing it from emptying itself very suddenly. It frequently happens, when the child is instantaneously expelled by a single contraction, being in a manner projected from the uterus, or when the body is speedily pulled out, whenever the head is born, that hemorrhage takes place. Delivery, therefore, is not to be hurried, the steps of expulsion should be gradual; instead of pulling out the body of the child, we should rather retard the expulsiou when it is likely to take place rapidly. Those who estimate the dexterity and skill of an accoucheur, by the velocity with which he delivers the infant, ground their good opinion upon a most dangerous and reprehensible conduct; and he who adopts this practice, must meet with many untoward accidents, and produce many calamities. On the other hand, severe and protracted labour, is no less apt to be followed by irregular contraction of the uterus, and hemorrhage.

Another mean of exciting the uterine action, is by supporting

the abdomen, and making gentle pressure on it with the hand immediately after delivery. I do not say that this practice is in every instance necessary, but it is so generally useful, that it never ought to be omitted. The circulation is also to be moderated by the free admission of cool air, by lessening the quantity of bed-clothes, by a state of perfect rest, and by avoiding the exhibition of stimulants. If these directions, which are few and simple, be attended to, we shall seldom meet with hemorrhage after the delivery of the child. Some women, no doubt, are peculiarly subject to this accident. They are generally of a lax fibre, easily fatigued and fluttered, and subject to hysterical affections.* When a woman is known to be subject to hemorrhage, we should give her a full dose of laudanum immediately after delivery, excite the action of the uterus by external pressure or friction: and, on the first appearance of discharge, perhaps in some instances whenever the child is born, we ought to introduce the hand into the uterus. We are not to meddle with the placenta, or endeavour to extract it; our object is to excite the contraction of the womb, and make it in due time expel the secundines. This gives little pain, and may be attended with most important consequences to the future health or comfort of our patient. I need scarcely, I think, add, that in every case, more especially in those where the labour has been tedious, or the woman has been subject to hemorrhage, we ought not to leave the bed-side, but should examine frequently, to ascertain that there is no unusual discharge.

The instant a woman is seized with hemorrhage after delivery, we ought to take steps for exciting the contraction of the uterus, upon which alone we place our hopes of safety.† Some powerful

* During pregnancy, there is sometimes a scorbutic or hemorrhagic diathesis induced, marked by vibices, spongy gums, bleeding from these or from the nose, or from a small wound, or after extraction of a tooth. If this be not corrected by strengthening diet, the free use of fruit and vegetables, and attention to the bowels, uterine hemorrhage of an obstinate description may take place after delivery. Dry diet and laxatives have been proposed, for those who were liable to hemorrhage; but the most effectual preventive, is due regulation of the labour and exciting the uterine action after delivery.

† It is a fatal error to wait until dangerous symptoms appear: many weeks of suffering, perhaps death itself, may be the consequence. I cannot therefore,

means are at all times within our reach. Friction, the application of cold, and the introduction of the hand into the cavity of the uterus. These are aided by the instant exhibition of fifty drops of laudanum.

The retention of the placenta is not in general the cause of the hemorrhage, but a joint effect, together with it, of the torpor of the uterus. Our primary object, therefore, is not to extract the placenta, but to excite the uterus to brisker action.(r) How improper and dangerous then must it be to thrust the hand into the uterus, grasp the placenta, and bring it instantly away; or to endeavour to deliver the placenta by pulling forcibly at the umbilical cord. By the first practice, we are apt to injure the uterus, and certainly cannot rely upon it for checking the hemorrhage. By the second, we either tear the cord or invert the uterus. Yet, although this be correct, I must not carry the rule too far. The placenta is retained, because the uterus does not act vigorously; but, in considerable torpor, I am inclined to think, that it may sometimes act injuriously, by preventing the uterus from collapsing, whilst it does not, on the other hand, make any stimulating pressure against its surface, as can be done by the hand. The mere removal of the placenta, after the womb has been excited by the introduction of the hand to lay hold of it, allows the sides of the now empty cavity to fall together, and this of itself stimulates to contraction, as the discharge of the water does during labour.

agree with the ingenious M. Le Roy, in the following directions respecting hemorrhage after the birth of the child. Quand la femme n'est pas delivrée, et qu'il survient une perte, il faut attendre patiement s'il ne se manifest aucun symptome alarmant, parce que cette perte cesse quelquefois d'elle-même. Mais quand les symptomes sont alarmans, et qu'on craint pour la vie de la femme, lorsque la matrice s'engorge et se degorge alternativement, lorsqu'enfin la femme se plaint d'eblouissemens dans les yeux, deviennent convulsifs, que le pouls devient trop petit, que les extremités sont froid, le visage d'une paleur mortelle, que le sang traverse le lit, qu'on entend dans le ventre des gemissemens qui annoncent la resolution des forces vitales, *alors* il faut employer des moyens propre à redonner du ressort à la matrice." Leçons. p. 50.

(r) As the most prominent indication in these cases would appear to be to excite powerful contraction of the uterus, the ergot, or secale cornutum, might here be given with advantage, in the manner heretofore mentioned.

Hence the manual abstraction of coagula, if hemorrhage take place after the expulsion of the placenta, is of signal benefit, often of more advantage than retaining the hand longer in the uterus.

When we introduce the hand, we conduct it to the placenta, using the cord only as a director. We do not attempt to bring it away, but press upon it with the back of the hand, to excite the uterus to separate it; or, if it be already detached, and lying loose in the cavity of the womb, we move the hand gently to stimulate the uterus, but do not withdraw it, nor extract the placenta, until we have, by gentle motion or pressure, excited the uterus, and feel it contracting, or until we are satisfied that the pressure of the hand is not effecting this purpose. In this case, on the principle just noticed, we ought to remove both the hand and the placenta at once, and several coagula are often propelled along with these, the uterus contracting so as to put an immediate end to all farther anxiety.

Friction is of evident advantage, in exciting the uterus. It is effected by placing the hand firmly on the abdominal parietes, and moving these briskly, but not rudely over the uterus, and occasionally grasping that viscus gently. This remedy has been often employed with success, and is very properly recommended strongly by Gardien and Power.

The contraction of the uterus will be powerfully assisted by the application of cold. The quantity of clothes should be lessened; but our principal object is to apply cold as a topical remedy; which should be done if the other means fail. Cloths dipped in cold water should be laid suddenly upon the belly, or cold water may be thrown upon it. In obstinate cases it has been found useful to project it forcibly with a syringe. We may in desperate cases dip a sponge or a piece of cloth in cold water, and carry it in the hollow of the hand into the uterus. Nay, ice itself has, with happy effects, been introduced into the womb.* In general,

* Saxtorph uses injections of vinegar and cold water. Pasta has the hardihood to use alcohol and acids, to cauterize, as it were, the mouths of the uterine vessels, which cannot fail to cause inflammation. Others introduce a sponge dipped in cold water, or a sow's bladder, which they afterwards blow up with air, to press on the uterine surface, or fill it with cold water, at the same time that they

however, the external application of cold will be sufficient to save the patient. I feel confident in advising it, and can say, without reserve, that I have never known any bad consequence result from it.(s)

The uterus, in such cases, generally contracts spasmodically, like an hour-glass, either before or after the expulsion of the placenta.* This spasm of the uterus is an almost invariable attendant on hemorrhage, and is accompanied with severe pain in the back, great depression of strength, and a very feeble pulse, sickness, and paleness, and last of all uterine hemorrhage, which occurs early, and is often profuse; but it is not the sole cause of the sinking and debility, for these often precede even internal hemorrhage, though they are speedily increased by it to an alarming degree. If a patient feel sick or weak, or the pulse sink, or she become pale soon after delivery, whether there be or be not hemorrhage, we may be sure that this spasm has taken place, and that nothing but prompt mea-

apply external pressure. Others use the cold bath itself. Le Roy rubs the abdomen with spirits, and Lapira praises the external application of a strong solution of carbonate of ammonia. Gardien supposes it may sometimes be so active as to require the lancet. Others plug the os uteri, and compress the abdomen. I do not think it necessary to comment on these proposals.

(s) It appears from a late publication, that a novel mode of restraining uterine hemorrhage, (taking place after parturition) has been attended with success, in Paris. It has been introduced by M. Evrat, and is as follows:—A lemon is deprived of its rind and skin, and its cells exposed over its whole surface. This is introduced into the cavity of the uterus, in the hand of the operator; by this means the blood flowing over the surface of the lemon can wash off only the juice that it meets with, but the innumerable cells of which the fruit is composed, remain untouched. The contraction of the uterus is soon excited by the presence of the hand, and some drops of the citric acid. It is at this instant, that by forcibly squeezing the lemon, its pure juice flows, without any admixture or dilution; and acts immediately on the internal surface of the uterus. M. Evrat advises, that in withdrawing the hand, the remainder of the lemon should be left in the uterus, supposing that it will excite the regular tonic contraction of the uterine fibres, and thus prevent any return of the hemorrhage. The uterus, when it contracts completely, will expel the compressed lemon, as happened in a case related in the work alluded to.

* Some have denied that the placenta was retained by spasm, but imagined that the cyst, in which it lay, was produced by the torpor of the part, whilst all the rest contracted; or from the uterus contracting round the placenta.

sures can preserve life. This effect of spasm, in causing debility, independently of the actual quantity of blood lost, or altogether disproportionate to it, is analogous to the effect of spasm of the stomach. We are immediately to give a full dose of laudanum. We must also, without loss of time, introduce the hand into the uterus, and slowly and cautiously dilate the stricture, so as to get the hand into the upper cyst of the uterus, thus stimulating to universal and regular contraction; and in doing so, we shall be greatly assisted by applying cold water to the abdomen, or dashing water smartly on it from a cloth. If the placenta be still retained, it is to be slowly detached, and after keeping it and the hand, for some time, in the under part of the womb, both may be withdrawn. No remedy whatever can, in my opinion, be depended on, so certainly as the introduction of the hand, and in no case ought it ever to be neglected. I will not go the length of saying, that it is infallible in its effects; but I can say, that if it fail, I believe nothing could succeed. I have met with most obstinate and alarming cases, but I never yet have lost a patient, from uterine hemorrhage after delivery, when I attended from the first; and I attribute this entirely to the prompt introduction of the hand.

When it happens that part of the placenta adheres pretty firmly to the uterus, we are not to be rude in our attempts to separate it, but should remember that there can be no danger in being deliberate. It is too much the practice with some midwives, to trust more to their fingers than to the contraction of the uterine fibres; the consequence of which is, that they tear the placenta, and irritate the womb. Yet it is certain, on the other hand, that gentle attempts to separate it are sometimes necessary; but these should be so cautiously and deliberately made as not to lacerate the placenta. The fingers should be very slowly and gently insinuated betwixt the uterus and the placenta, so as to overcome the adhesion, which is seldom extensive. I have known the placenta retained, for four days, by an adhesion not larger than a shilling. This case proved fatal by loss of blood, which continued to take place, I understand, in variable quantity, during the whole time. No attempts were made to relieve the woman until she was dying.

We can in general save the patient in flooding, if we are on the

spot when it happens; but if much blood have been lost before we arrive, the strength may be irreparably sunk. In those cases where great weakness has been produced, we must not only endeavour to excite the uterine contraction, in order to prevent further injury, but we must also husband well the power which remains. The hand is to be immediately introduced into the womb, and must be kept there, moving it gently, until the fibres contract; and until this takes place, neither the hand nor the placenta should be withdrawn. A cloth moistened with cold water is to be applied suddenly on the abdomen; pressure, along with friction, is to be made by the hand on the region of the uterus, and the whole belly firmly supported with a bandage, provided that can be applied without moving the patient much. But, as every exertion is dangerous, motion must be avoided; and upon no account is the patient to be shifted or disturbed, for some time. By imprudent attempts to raise the patient, or "to make her more comfortable," she has sometimes suddenly expired.*(t)*

The state of the stomach is to be watched, preventing, as far as we can, that feeling of sinking which is apt to take place in all floodings. This is to be done by keeping up the action of that important organ with soup, properly seasoned, and given in small quantity, but pretty frequently repeated. Cordials, as, for instance, Madeira, diluted or pure, should be given in small doses regularly for some time, to support the strength; but after recovery begins to take place, and the pulse steadily to be felt, they should be omitted or decreased; for if persisted in to the same extent, fever or inflammation may be excited. Opiates are of greater service in all cases of uterine hemorrhage after delivery. They are among the safest and best cordials we can employ, and must in every instance be exhibited. The dose ought to be proportioned to the urgency, varying from fifty to sixty drops. In some instances, when the debility was great, a hundred drops of the tincture, or when the stomach was very irritable, five grains of solid opium, have been

(*t*) Le Roy thinks the position of the patient in hemorrhages, is worthy of consideration; in uterine hemorrhage, the horizontal position of course must be preferred, and the feet should be more elevated than the head.

given at once, and afterwards three grains every three hours, till the patient was out of danger. Nor does this practice ever prevent the contraction of the uterus, or produce afterwards any bad effect. Opiates supply the place of wine, and are infinitely safer. Aromatics have been given, such as tincture of canella, with good effect. Iced water has also been recommended, but of this I have no experience.

We must be careful neither to give nourishment nor cordials so frequently as to load the stomach, which produces sickness and anxiety, until vomiting remedy our error. This last symptom, when moderate, is not always unfavourable, for it sometimes excites more powerfully the contraction of the womb. The rising of the pulse, and relief of the patient after it, are to be ascribed not so much to any direct power which this operation has of invigorating the system, as to the consequent removal of sickness and oppression. If these effects do not follow from vomiting, the case is very bad. Solid opium is the most effectual remedy against repeated vomiting. It must be given in the dose of at least three, and in some cases, four grains.

When the hemorrhage has produced complete syncope, the state of the patient is very alarming. Yet the danger is not the same in every case, for some women faint from slighter causes than others. La Motte relates one case where the patient fainted no less than twenty times, in the course of the night. She is to be preserved in a state of the most perfect rest, the face is to be smartly sprinkled with cold water, and a little wine or brandy, or spiritus ammoniæ aromaticus, given after the opiate already exhibited, to rouse the system. Afterwards, warm spiced wine may be given in small quantity, and warm cloths applied to the feet. Friction on the region of the stomach, with some stimulating embrocation, as hartshorn and spirits, may be useful. I need not add, that the patient must, in these awful circumstances, be carefully watched; and that, if the expression be allowed, we must obstinately fight against death. It may appear to some that stimulants, and other means to remove syncope, must renew the hemorrhage, and that the syncope itself is useful, by checking the circulation. But no man of observation can suppose syncope to be safe, in

hemorrhage after delivery, or hesitate, by opium and brandy, or wine, to recall his patient to animation, or prevent a renewal of the fainting fits.

It was at one time the practice to prevent the patient from sleeping, or indulging that propensity to drowsiness which often follows hemorrhage. But we can surely, at short intervals, give whatever may be necessary to the patient, without absolutely preventing sleep, or rather slumber, for the patient never sleeps profoundly. We are to attend so far to the advice, as not to allow the slumber to interfere with the administration of such cordials or nourishment as may be requisite.

When the placenta is rashly extracted, immediately after the delivery of the child, or suddenly taken away upon the accession of hemorrhage, then we find that the uterus does not contract properly, and the vessels pour out blood plentifully. This in part escapes by the vagina, but much of it remains in the cavity of the uterus, where it coagulates, and hinders the free discharge of the fluid by the vagina. But blood may be still poured out into the cavity of the womb, which becomes distended, and that often to a great size. Thus it appears, that after delivery the hemorrhage may be sometimes apparent, sometimes concealed. When it flows from the vagina, it is always discovered by the patient; but when it is confined in the uterus, it is only known by its effects; the pulse sinks, the countenance becomes pale, the strength departs, and a fainting fit precedes the fatal catastrophe.

Even when the placenta has not been rapidly extracted, hemorrhage may come on, and most frequently it, in this case, proceeds from rash exertion, or much motion. In an uncivilized state of society, we find that almost immediately after delivery, the parent is able to walk about; but women brought up in the European modes of life, cannot use the same freedom. Motion not only disorders the action of the uterus, and impairs its contraction, but also powerfully excites the circulation.

The continued application of a great degree of heat, mental agitation, and the use of stimulants, may also contribute to the production or renewal of hemorrhage.

A partial or complete inversion of the uterus is another cause

of hemorrhage, and which can only be discovered by examination.

Sometimes a partial or irregular contraction of the uterine fibres takes place, and the person is tormented by grinding pains, accompanied by repeated hemorrhage.*

The retention of a small portion of the placenta, which has firmly adhered to the uterus, is also a cause of hemorrhage, and the discharge may be renewed for many days, until the portion be expelled.

It may also happen that, from some agitation of mind or morbid state of body, the uterus may not go regularly on in its process of contraction or restoration,† to the unimpregnated state. In this case, the cavity may be filled with blood, which forms a coagulum, and is expelled with fluid discharge. The womb may remain stationary, for a considerable time, and the coagula be successively expelled, with slight pains, and no small degree of hemorrhage. These symptoms very much resemble those produced by the retention of part of the placenta, and cannot easily be, with certainty, distinguished from them. We have, however, less of the fœtid smell, and we never observe any shreds or portion of the placenta to be expelled, whilst the coagulum, if entire, has exactly the shape of the uterine cavity.

Lastly, we find, that if exertion have been used before the uterus has been perfectly restored, there may be excited a draining of blood, which does not come, in general, very rapidly; but, from its constant continuance, amounts ultimately to a considerable quantity, and impairs the health and vigour of the woman. This has been called menorrhagia lochialis.

* When the abdomen has been bandaged too tightly, the parts within are injured. The patient is restless and uneasy; the pulse is frequent; she complains of pain about the uterus, and numbness in the thighs. Sometimes the lochia are obstructed; sometimes, on the contrary, pretty copious hemorrhage is produced. Relief is obtained by slackening the bandage; by giving an anodyne; and, if there be no hemorrhage, by fomenting the belly.

† This, at first, is owing to muscular contraction; afterwards, absorption forms part of the process. But if these operations shall be interrupted, or injured, then the vessels, which are still large, not being duly supported, will be very apt to pour out blood.

When hemorrhage, whether external or internal, takes place in moderate quantity, immediately after the expulsion of the placenta, and when the system does not seem to suffer materially, we may be satisfied with firmly supporting the uterus by external pressure, and applying a dry cloth closely to the orifice of the vagina. The blood thus coagulates in the uterus, which, being supported by the external pressure or bandage, does not distend, and the action of its fibres is soon excited. After-pains are to be expected, but the fear of hemorrhage is removed. In some instances, when we have had no external hemorrhage, and the blood has been slowly poured into the uterine cavity, little inconvenience is produced for some time. But presently, by the pressure of the womb on the neck of the bladder, a retention of urine is caused, attended with much pain in the belly. This is in general instantly removed, by introducing the finger into the vagina, and raising up the uterus. If it should not, the catheter must be employed.

But whenever hemorrhage takes place to such an extent as to endanger the patient, and produce the effects I have already mentioned, then we must interfere more actively: and I need not attempt to prove, that the only security consists in uterine contraction. This is to be excited by the application of cold, and by the introduction of the hand, not simply to extract the coagula, but to stimulate the uterus, and rather make it expel them. It in general will be found that the uterus is affected with spasm. Nothing is so useful as retaining the hand for some time in the lower part of the uterus, and occasionally gently dilating the contracted spot above, at the same time that we rub externally. The extraction of coagula from the cavity is of signal benefit, and if necessary this must be done oftener than once. Gardien has made a practical remark, which perfectly agrees with my experience, that the successive emptying of the uterus is the best remedy, yet this must not be done too rapidly. What good can accrue from allowing coagula to remain? It cannot prevent the farther flow, for no vessels of such size as the uterine can be stopped in this way. No harm can arise from their removal; for if the womb do not contract, and the flow continue, we re-introduce the hand, and are at least as well as we were before. We must also proceed with opiates, cordials,

and nourishment, upon the rules formerly stated for recovery; and we shall do well, not to be in a hurry to quit our patient, for the hemorrhage may be renewed, and she may be lost before we can see her.

When the hemorrhage proceeds from irregular action of the uterus, and is attended with grinding pain, a full dose of tincture of opium is of advantage, and seldom fails in relieving the patient.

If the placenta have been torn, and a portion of it remain attached to the uterus, the hemorrhage is often very obstinate. Both clotted and fluid blood will be discharged repeatedly. The clot has the shape of the uterus, and is expelled with fluid blood like an abortion. An offensive smell proceeds from the uterus, and at last the portion of placenta is expelled in a putrid state, after the lapse of many days, or even weeks; and this expulsion is often attended with severe attack of hemorrhage. By examination, the os uteri will be found soft, open, and irregular.

If by the introduction of the finger we can feel any thing within the uterus, it should be cautiously extracted; but we are not to use force or much irritation, either in our examinations or attempts to extract, lest we inflame the womb. It is more advisable to plug the vagina, and even the os uteri, so as to confine the blood, and excite the uterine contraction. We may also inject some cold and astringent fluid for the same purpose, or throw a full stream of cold water into the uterus, from a large syringe, by way of washing out the portion of placenta, if it have become nearly detached. A gentle emetic sometimes promotes the expulsion. The bowels are to be kept open, and the strength supported by mild and nourishing diet; but we must take care, on the other hand, not to fill the vessels too fast. If febrile symptoms arise, the case is still more dangerous, as I will presently notice.

When the hemorrhage proceeds from an interruption of the process of restoration, our principal resource consists in exciting the contraction of the womb by the use of clysters—by friction on the abdomen—by injecting cold and astringent fluids into the womb—by the exhibition of a gentle emetic—and by throwing cold water from a syringe upon the abdomen, when the womb is expelling the coagulum. We also check the hemorrhage, and save blood,

by the prompt application of the plug, and diminish the action of the vessels themselves, by allaying or removing every irritation, and avoiding the frequent use of stimulants, or attempts to fill the vessels too quickly. The feeling of sinking, sickness, tendency to syncope, &c. are to be obviated by the means already pointed out.

Lastly:—The menorrhagia lochialis is to be cured by rest, cool air, the use of tincture of kino, sulphuric acid, or other tonics, bathing the pubis or back with cold water, and injecting an astringent fluid three or four times a-day into the uterus. Sometimes whenever the discharge stops, the patient complains much of stomachic affection. This is to be allayed by laxatives and aromatics, or rubefacients applied to the epigastrium. When it alternates with diarrhœa, confectio catechu is useful, along with some bitter tincture. If the pulse be frequent, the exhibition of digitalis for a short time will be of advantage. Pain in the back generally attends this disease, and is sometimes so severe as even to affect the breathing. In this case, a warm plaster applied to the back is often of service; and, if the pulse be soft, an anodyne should be administered. In slight cases, the application of cloths dipped in cold vinegar, to the back, does good.*(t)*

(t) The acknowledged efficacy of the ergot, in increasing the energy of uterine contractions, would appear to point it out as a proper remedy to be had recourse to in the cases of hemorrhage alluded to in this chapter; and as Dr. Bigelow has well observed, in females habitually subject to profuse hemorrhage at the period of parturition, there is perhaps no better preventive than a full dose of ergot, administered just before delivery. The editor has been in the practice of exhibiting it in powder, in doses of a scruple, mixed in any syrup; but it may also be given in infusion or decoction; for instance, a drachm of the powder may be infused in half a gill of boiling water and a table spoonful of the turbid fluid, may be given every 20 minutes, till its effects are perceptible.

CHAP. III.

Of Inversion of the Uterus.

Inversion of the uterus implies, that the inside is turned out, and down into the vagina. It may take place in different degrees, and it has been divided accordingly into the simple depression; the incomplete inversion, when the fundus is merely engaged in the orifice; and the complete, when it protruded out of the vagina, and exactly resembled the uterus after delivery, only the mouth turned upward. The vagina is, in this case, also partly reversed or inverted, so that the tumour is of considerable length. When it is partial, the tumour is retained altogether, or chiefly within the vagina, and the fundus only protrudes to a certain degree through the os uteri, forming a firm substance, something like a child's head.* When the uterus is inverted, the patient feels great pain, generally accompanied with a bearing-down effort, by which a partial inversion is sometimes rendered complete. The pain is obstinate and severe, she feels very weak, the countenance is pale, the pulse feeble, perhaps nearly imperceptible, a hemorrhage very generally attends the accident, and often is most profuse. But it is worthy of notice, that frequently complete inversion is not accompanied with hemorrhage,† whilst a very partial

* Mr. White of Paisley describes it very well, as resembling a printer's ball. Med. Com. Vol. XX. p. 147. Sometimes it does not pass through the os uteri. Denman, II. p. 351.

Mangetus, lib. IV. p. 1019, relates a fatal case, where the tumour was taken for the head of a second child. It was at first partially, and then completely, inverted with excruciating pain.

Mr. Smith relates a case of inversion, where the accident was followed by syncope, subsultus, &c. The subsultus and frequent pulse continued for some days, with smart fever, and inability to move. Med. and Phys. Jour. Vol. VI. p. 503. In the same volume, Mr. Primrose gives an instance where a great part of the uterus sloughed off, and the woman recovered.

† This was the case, in the instance related by Dr. Hamilton. Med. Com. Vol. XVI. p. 315.—In the case by Mr. Brown, the hemorrhage was considerable.

inversion may be attended with a fatal discharge; although there be little hemorrhage, the face is pale, and the pulse weak and rapid, a sensation of dragging at the stomach or a feeling as if the bowels were pulled out of the belly, may accompany inversion. Fainting, and convulsions, are not unfrequent attendants, although the hemorrhage have been trifling. Inversion is suspected to exist from the symptoms mentioned, and on examination, the womb is felt more or less protruded like a mass of flesh, whilst no hard uterus can be discovered in the hypogastrium.

Inversion, in a great majority of instances, depends upon the midwife* endeavouring to extract the placenta, by pulling the cord.*(u)* Sometimes the uterus is directly pulled down, and the placenta still adheres; in other cases it is separated. It may also happen, if the child be allowed to be rapidly expelled; for if the cord be short, or entangled about the child, the fundus may receive a sudden jerk, and become inverted. From the same cause, or sometimes perhaps from sudden pressure of part of the intestines on the fundus uteri, occasioned by strong contraction of the abdominal muscles, a part of the fundus becomes depressed like a cup, and encroaches on the uterine cavity. This generally rectifies itself if let alone; but if the cord be pulled, or if there be any tendency in the uterine action, to go toward the fundus, as happens when that part is lacerated, and may in like manner occur in the

Annals of Med. Vol. II. p. 277. I have seldom seen much hemorrhage attend complete inversion.

* Chapman relates a case of inversion, where the midwife pulled forcibly at the uterus, and excited convulsions, fainting, and death. Case 29, p. 123.

(u) Or probably, by pulling at the cord before that contraction of the uterus which is to expel the placenta from its cavity, takes place:—hence may be deduced a general rule worthy of the attention of young practitioners, to wait, after the delivery of the child, until the woman complains of pain, (which generally indicates the contraction of the uterine fibres) before they attempt to cooperate in the extraction of the placenta, and even then to act with caution.

An exception may nevertheless occur to this rule to be noticed here, viz. that sometimes the same contraction that expels the child, may detach the placenta, and propel it into the cervix uteri and vagina; this is to be determined by examination; and if found to be the case, we proceed to immediate extraction.

present case, the depression is speedily converted into perfect inversion. It is in this way that we are to account for those cases which have apparently taken place many days after delivery, and where, either with or without hemorrhage, the uterus has suddenly come down. It would appear, however, that this depression of the fundus, ending at last in complete inversion, may take place some time after delivery. There is one case of this kind recorded, when, on account of hemorrhage, the hand had been introduced, and the uterus was not found unusual in its figure. On the 12th day inversion took place. Even in this instance, however, it is by no means certain that there was no depression early; for the practitioner, Ané, might not have attended minutely to this circumstance, not expecting it. An incomplete inversion may remain for life, and occasion incurable fluor albus and hemorrhage. Some, however, speculate on a cure being effected by pregnancy, which doubtless would be the case if that could take place.

It has been supposed possible, that inversion might take place in the virgin state, if the womb had been distended by blood or other fluid.

Inversion may terminate in different ways. It may prove rapidly fatal by hemorrhage; or it may excite fatal syncope, or convulsions; or it may operate more slowly, by inducing inflammation, or distention of the bladder; or after severe pains and expulsive efforts, the patient may get the better of the immediate injury, the uterus may diminish to its natural size, by slow degrees, and give little inconvenience;* or it may discharge fœtid matter, and give rise to frequent debilitating hemorrhage, with copious mucous discharge in the intervals; or hectic comes on, and the patient sinks in a miserable manner. It has also been said, that after a lapse of many years, the inversion might be spontaneously cured, which Dailliez explains, by supposing that the tubes pull up

* La Motte, 383, mentions a woman who had inversion for above thirty years. Dr. Cleghorn, Med. Commun. II. 226, relates a case where the uterus slowly returned to its natural size. This woman still menstruates, and enjoys tolerable health; it has been of twenty years standing. The womb is smooth, moist, and gives little pain. Menstruation also continued in Dr. Hamilton's case, Com. XVI. p. 315.

the inverted part. There are two examples of this termination recorded, and one of them (Mad. Bourchalatte,) on the authority of the justly celebrated Baudelocque.* In this case the restoration took place, after a lapse of eight years. If this be physically possible, it must at least be exceedingly rare.

If inversion be discovered early, the uterus may be replaced. If it have protruded out of the vagina, it is, first of all to be returned within it; if it have not, we proceed directly to endeavour to return it within the os uteri, by cautiously grasping the tumour in the hand and pushing it upwards, within the os uteri. This may be facilitated by pressing up the most prominent part of the fundus in the direction of the axis of the uterus, so as gradually to undo the inversion, or re-invert the protruded womb: a piece of wood with a round head has by some been used in this way; but the fingers are safer. If we push directly without compressing the tumour, we sometimes bring on violent bearing-down pains. These are occasionally attended with increase, or renewal, of flooding, and in all cases on pressing the uterus, small vessels spout like arteries in an operation. If we succeed, we should carry the hand within the uterus, and keep it there for some time, to excite its contraction. If the placenta still adhere, we should not remove it until we have reduced the uterus; after which, we excite the contraction of the womb to make it throw it off.† It is sometimes long before the pulse becomes steadily to be felt.‡ Occasionally, after the reduction, when the patient is seeming to do well, she is seized with a fit and dies.§ Or, she may remain long weak, and have swelled feet.‖

If inversion have not been discovered early, it is more difficult, nay, sometimes impossible to reduce it, owing chiefly to contrac-

* Gardien, Traité, Tom. III. p. 335.

† In a case related in Memoirs of Med. Soc. Vol. V. 202, the placenta was allowed to remain five days after reduction, but this is a hazardous practice.—Perfect, case 71, brought it away after four hours.

‡ Case by Dr. Duffield, in Trans. of Coll. at Phil. 167.

§ Case by Dr. Albers. Annals of Med. Vol. V. 390.

‖ Mr. White's case, Med. Comment. Vol. XX. 247.

tion of the os uteri.(*x*) Dr. Denman says, that he has found it impossible to reduce it, even four hours after it took place: and in a chronic inversion, he never once succeeded. In such cases, it is not prudent to make very violent efforts to reduce the uterus, as these may excite convulsions, &c. Soon after becoming inverted, the uterus is apt to swell and inflame. If this have happened, no attempt should be made to reduce, till by bleeding, and rest, and mild fomentations, this state have been allayed. We must in every instance alleviate urgent symptoms, such as syncope, retention of urine, or inflammation, by suitable means. I may further observe, that when a patient, after delivery, complains of obstinate pain, or bearing down, or suppression of urine, or is very weak, we should always examine per vaginam. If the uterus be inverted, we may feel the tumour, and we may find the hard womb to be absent in the belly, or lower down than it should be. If this examination be neglected, the patient may be lost. I have known the first intimation given to the practitioner, to be his finding no uterus in the belly, when it was opened after death. Examination is of the utmost consequence.

When the uterus cannot be replaced, we should at least return it into the vagina. We must palliate symptoms, apply gentle astringent lotions, keep the patient easy and quiet, attend to the state of the bladder, support the strength, allay irritation by anodynes, and the troublesome bearing down by a proper pessary; the bad effects of neglecting or removing this are to be seen in La Motte's 385th case. A spring bandage is also useful. If inflammation come on, as is usually the case, we must prescribe blood-letting, laxatives, &c. In this way, the uterus contracts to its natural size, and the woman menstruates as usual, but generally the health is delicate.

(*x*) In cases of *partial* inversion, where it has been found impracticable to reduce the uterus, it has been advised to grasp the portion which has passed through the os uteri firmly with the hand, and render the inversion complete, by bringing the whole of the uterus into the vagina, and keeping it there. By this means, the danger of strangulation from the stricture occasioned by the contraction of the os uteri on the body of that viscus, is presumed to be prevented. This plan appears to have succeeded in a case related by Dr. Dewees, in the Philadelphia Medical Museum, Vol. VI. p. 20. and seq. Case 2d.

Sometimes the uterus becomes scirrhous, or gangrenous sloughs take place.*

If the uterus discharge fœtid matter, and hemorrhage take place, the strength is apt to sink, and the patient dies hectic. Astringent applications, with attention to cleanliness, good diet, and the occasional use of opiates may give relief; but if they do not, we are warranted to prefer extirpation of the uterus to certain death. This operation has been repeatedly successful,† and is performed

* Schmucker's Surgical Essays, Art. xvii.—A case is given, Med. Journ. VI. 367, where appearance of gangrene, from strangulation, took place. The womb was scarified, and the swelling quickly disappeared. The patient recovered.

† The inverted uterus has been torn off with the crotchet, being mistaken for the child's head. Jour. de Med. Tom. XLI. p. 40. A case of successful extirpation is inserted in the same work for August 1786. Wrisberg relates a case, where it was cut off by the midwife, who had inverted it. A successful case is given by Dr. Clarke, in Edin. Med. and Surg. Jour. Vol. II. p. 419. Another case is mentioned in the Recueil des Actes de la Societé de Lyon. Petit of Dijon says, a surgeon, by mistake, applied the ligature and cured the woman. The surgeon's son denies that the cure was wrought by mistake. Osiander relates a case where the midwife pulled down the uterus and placenta, and cut them both away. The patient recovered, and afterwards was exhibited during every course of lectures. Mr. Hunter of Dumbarton gives a successful case, in Annals of Med. Vol. IV. 366. I have particularly examined this woman, several years after the operation. She was delivered without any violence, after having been twenty-four hours in labour. In about an hour the placenta came away. She had considerable flooding and great weakness. She could not void her urine, which in two days was drawn off with the catheter, and this was frequently repeated. A fortnight after delivery, the womb came down with pains. It was replaced, but again came down. A fœtid discharge took place, and the woman was reduced to a state of great weakness. A ligature was applied, which she says, gave her a good deal of pain, and the tumour was cut off. Her account differs in some respects from Mr. Hunter's, probably owing to her speaking from memory alone, some years after the event; and she does not notice the previous extraction of any lumps from the uterus, which Mr. Hunter mentions, for most likely she did not know of that. About two years ago, she had for a length of time a discharge of thick white matter. At present, the vagina is of the usual length; and at the top a transverse aperture is felt, the posterior lip or edge of which is longer and more tendinous to the feel, than the anterior. It admits the tip of the finger, and feels softer than the os uteri, in a natural state. There is no cervix uteri. The mammæ are firm, and of good size, and she has not lost the sexual desire. She is subject to dyspepsia. From the preparation in the possession of Dr. Jeffray, there can be little doubt that part of the uterus was extirpated.

by applying a ligature high up, and cutting off the tumour below. But it must also be remembered, that in some cases where the inverted uterus has been either intentionally extirpated, or mistaken for a polypus,* death has followed.

Inversion, when long continued, may be confounded with prolapsus, or polypus: from the first, it is distinguished by the shape and by the absence of the os uteri; from the second, by attending to the history, and by careful examination. In complete inversion, there may be a rugous state or corrugation at the top, but can be no distinct orifice, as in polypus. A polypus is more moveable, especially more capable of being rolled. It is generally of a different shape, being more bulging at the extremity and having a smaller pedicle, and the finger can be carried as far as it can reach within the os uteri, which embraces it more like a ring than a mouth with projecting lips. It is quite insensible, yet we must remember, that pressing it may press the uterus and cause sensation; but scratching or irritating it does not give pain. Still there may be cases where some doubt remains.†

Mr. Newnham, in his Treatise on Inversion, p. 31, relates the case of Mrs. Glasscock, who had a ligature applied to the inverted uterus, but, on account of pain, it was removed in some hours. As she was evidently losing ground, it was re-applied on the 13th of April. It produced much pain, which came at intervals, like that of labour. This was allayed by opiates, and the ligature gradually tightened. She was very irritable, and suffered much from spasmodic pain; but, on the 6th of May, the tumour dropped off and she got well. As the finger could be passed within the os uteri, and around the tumour, the inversion must have been incomplete. The inverted uterus, when touched with the finger, appeared to be nearly insensible, and had never caused pain.

Bartholin relates a case, where the inverted womb was torn away, and found under the bed of the dead patient.—Blasius, a case, where the uterus was hard and scirrhous; it was tied, but on the third day the patient died. In the cavity of the portion were found the ovaria and ligaments.—Goulard's patient died on the 18th day. Mem. of Acad. de Sciences, 1732. The uterus has also been successfully extirpated, partly by the ligature, partly by the scissors, by Mr. Windsore. Med. Chir. Trans. Vol. X. p. 358.

* In a case related in Recueil des Actes de la Societé de Santé de Lyon, the uterus was taken for polypus, and the ligature applied. The mistake being discovered, it was instantly withdrawn, but the woman died in a few days.

† In one case the os uteri adhered to the neck of the polypus, and gave rise to appearance of inverted uterus. Mem. of Med. Soc. Vol. V. p. 14.

An incomplete inversion is more apt to be mistaken, for the finger can be passed within the os uteri, and along what appears to be the stalk or pedicle of a polypus; but this root is thicker than in the polypus, and the os uteri is somewhat thickened and projecting. The tumour itself is not very sensible, but nevertheless may be distinguished from polypus by scratching it gently with a sharp probe, which will cause some sensation, whilst in the polypus it causes none unless we move it, and thereby move the womb.(y)

CHAP. IV.

Of After-pains.

Few women proceed through the early part of the puerperal state, without feeling attacks of pain in the belly, which are called after-pains. These are generally least severe after a first labour. They proceed from the contraction of the uterus in an irregular manner, excited by the presence of coagula, or other causes, and each severe pain is generally followed by the expulsion of a clot. They come on usually very soon after delivery, and last for a day or two. They are often increased, when the woman first applies the child to the breast. They are distinguished from inflammation of the uterus or peritoneum, by remitting or going off. The belly is not painful to the touch, the uterine discharge is not obstructed, the patient has no shivering nor vomiting, the milk is secreted, and the

(y) Inversion of the uterus may be occasioned by the weight of an excrescence of the nature of polypus, depending from the fundus of the uterus.—For a case of this kind, together with an *illustrative plate*, see Denman's Collection of Engravings, tending to illustrate the generation and parturition of animals, and of the human species.

The fundus of the uterus was completely inverted, and dragged through the os uteri into the vagina. This case is worthy of consultation.

pulse is seldom frequent. When the pulse is frequent, then we must always be on our guard: for if this be the case before the accession of the milk-fever, the patient is not out of danger, and if any other bad symptom appear, we must be prompt in our practice. After-pains may also be caused by flatulence and costiveness, which we know by the usual symptoms; but a combination of this state with uterine after-pains is often attended with a frequency of the pulse, and may give rise to a fear that inflammation is about to come on, but other symptoms are absent. Uterine after-pains are relieved by opiates,(z) friction, and fomentations, and these are the usual remedies; but if protracted, or very severe, the spasmodic action which causes them, is more readily and effectually removed, by a purgative than by opium. This fact I first learned by accident. If the pulse be frequent, this is indispensible. A severe constant pain in the hypogastric region is sometimes produced by an affection of the heart, and proves fatal, yet the uterus is found healthy.

Upon this subject, it may not be improper to mention, that a young practitioner may mistake spasmodic affections or colic pains for puerperal inflammation; for in such cases there is often retching and sensibility of the muscles, which renders pressure painful. But there is less heat of the skin, the tongue is moist, the pulse, though it may be frequent, is soft, the feet are often cold, the pain has great remissions if it do not go off completely, there is little fulness of the belly, and the patient is troubled with flatulence. It requires laxatives, antispasmodics, anodyne clysters, and friction with camphorated spirits. Oil of turpentine acts both as a laxative and antispasmodic. In doses of half an ounce, it often relieves spasmodic pain in the stomach or bowels; but in this case, it is better to combine it with castor oil, giving two drams of the former

(z) It is frequently necessary to give the opiate in pretty large doses, and repeat it every few hours; as for instance, 2 grains of purified opium, or 50 or 60 drops of laudanum; where these fail, the best effects are sometimes experienced from an enema of 80 or 100 drops of laudanum, in four table-spoonfuls of thin starch, or infusion of flaxseed. When these do not succeed, the strong infusion or tincture of hops may be tried, or camphor and opium combined, given by the mouth.

and four of the latter. Blood drawn in this disease, after it has continued for some hours, even when the woman is not in child-bed, is sizey; and it is always so in the puerperal as well as the pregnant state, although the woman be well. The external application of oil of turpentine is also useful.

It is necessary to attend carefully to the duration and situation of pain after delivery, and to the symptoms connected with it. For it may proceed from inflammation of the viscera; or in some cases it is felt near the groin, and may be the forerunner of swelled leg; or about the hip, ending in a kind of rheumatic lameness; or in consequence of the application of cold, pain may be felt in some part of the recti or oblique muscles, which, if not removed by fomentations and frictions, may end in abscess, which frequently is long of bursting, and excites hectic fever. It ought to be opened with a lancet.

Rheumatism, affecting the muscles of the abdomen and pelvis, is accompanied with less fever than puerperal inflammation, and wants the other symptoms. The pain is shifting and aching, or gnawing, though sometimes it is pretty sharp, like a stitch. It is relieved by friction, with laudanum, by sinapisms, and by mild diaphoretics, bark, and the usual treatment. When speaking of rheumatic pain, it may not be improper to mention, that chronic rheumatism, especially of the extremities, is very troublesome when it occurs after parturition. It requires the usual remedies. Cod-liver oil, in doses of half an ounce, three times a-day, has been much recommended. I have formerly noticed those pains in the limbs which may succeed the use of the crotchet.

CHAP. V.

Of Hysteralgia.

By hysteralgia, I understand uterine pain proceeding from spasm, and not from inflammation. This may occur soon after delivery,

and is marked by severe pain in the back and lower belly, frequent feeble pulse, sickness, and faintness. This is sometimes accompanied with discharge, or succeeded by expulsion of a coagulum. It requires a purgative clyster immediately, and afterwards an opiate; or, if it occur very early after delivery, we may reverse the practice, and give instantly an anodyne clyster, to be followed by a purgative medicine if the stomach will bear it. Another modification of this comes on later, but always within three or four days after delivery, and attacks in general very suddenly. Perhaps the patient has risen to have the bed made, becomes sick, or vomits, and is seized with violent pain in the lower part of the belly, or between the navel and pubis. There is no shivering, at least it is not a common attendant, and the pulse becomes very rapid, being sometimes above a hundred and twenty, the skin is hot, the lochia usually obstructed, and the uterine region is somewhat painful on pressure. After some hours the severity abates, and presently by proper means the health is restored.

As the lochial discharge is usually obstructed, this obstruction has been considered as the cause of the pain and other symptoms; but it is merely an effect, and sometimes does not exist. The cause appears to consist in a deranged state of action in the uterus, which is productive of spasm of the uterine fibres, and sometimes of the intestines. This is more apt to occur after a severe or tedious, than after an easy labour, but it may occur in any case, especially if exposed to cold. The symptoms will vary a little in severity and in appearance, according as the uterus alone is affected, or as spasm of the bowels is combined with the uterine pain. It is distinguished from inflammation by the sudden nature of the attack, the absence of shivering in general, the pain becoming speedily more severe than it does at the same period of inflammation; and frequently it greatly remits, or goes almost entirely away for a short time. It is possible, however, for this state, especially if it be neglected, to excite inflammation, which is marked by constant pain, more or less severe according to the part affected, and an obstinate continuance of the fever.

The first thing to be done, is to administer a turpentine clyster to open the bowels. Then the belly is to be fomented, and if

speedy relief be not obtained by these means, an anodyne injection is to be given, and the saline julap is to be taken freely, with the addition of a little antimonial wine, in order to excite a free perspiration. If the symptoms continue, I strongly advise the detraction of blood. Purgatives are useful, and a cloth soaked in oil of turpentine must be applied to the pained part of the belly, to prevent inflammation.

CHAP. VI.

Of Retention of part of the Placenta.

If either the whole, or a considerable portion of the placenta, be left in utero for some time, the patient is exposed to great danger. Hemorrhage is not the only risk, for in many cases severe headach, hysterical affections, sickness, nausea, prostration of strength, and fever have taken place, and continued until the placenta have been expelled, after which the patient has begun to recover. On the other hand, it has, though more rarely, occurred, that the placenta, having been retained for a length of time, has been expelled before these symptoms have become urgent; but they have afterwards gradually increased, and carried off the patient.* Sometimes the symptoms run so high, or the portions of the placenta are so obstinately retained, that the patient sinks under the disease, as in ordinary cases of hectic, with frequent small pulse, burning heat of the hands and feet, profuse perspirations, and universal emaciation; or dies with symptoms similar to those of putrid fever; or is carried off suddenly by a convulsion, or an attack of hemorrhage.

* In a case related by Mr. Whyte, the secundines, after a clyster, came away in a putrid state on the fifth day. On the sixth, the patient was much oppressed, had fœtid breath, &c. on the twelfth an eruption appeared, and she died on the twenty-second.

These symptoms have a very indefinite duration, for sometimes the patient dies in a very few days; in other instances they are protracted for two or three weeks.* Sometimes no hemorrhage takes place during the whole course of the disease, but occasionally, repeated hemorrhages do occur, adding greatly to the debility of the patient. In several cases, inflammation has come on, and spread to the intestines. In some of these, the placenta has been afterwards expelled, in others extracted; but very few have recovered. On inspecting the uterus, it has either been found black, as if it had been gangrenous, or in a state of high inflammation, or of suppuration, whilst the parts in the vicinity were in various stages and degrees of inflammation.

Now, when these symptoms have taken place, our object ought to be to remove the cause, and support the patient under the disease. I am aware, that some have attributed these symptoms not to the placenta, but to concomitant circumstances, such as injury done with the hand in endeavouring to take it away. But we find that they take place when the whole of the placenta has been left, without any attempt having been made to remove it. They are produced when any substance is left to corrupt in utero.† They continue as long as it remains, and they usually cease when it is expelled.

It may be proper to examine, with the finger introduced into the os uteri, whether any portion of the placenta can be felt and removed; but generally this cannot be freely done, for the uterus itself, as well as its mouth, is hard and contracted, and no violent or painful attempt with the hand or finger ought to be made. But when we can easily feel and act upon a portion, we ought slowly and gently to endeavour to bring it out; and if the whole of the

* Dr. Perfect relates a case, in which the secundines were retained till the eighth day, when the patient died. Her stomach rejected all food and medicine, she had weak quick pulse, hiccup, and *subsultus tendinum*. Vol. II. p. 390.—In another case, the placenta was retained till the thirteenth day, and the woman died on the twentieth, p. 381.

† Similar symptoms have been produced by the head of the child being left in utero. Perfect, Vol. II. p. 80.

placenta have been left, such attempts are still more necessay, and likely to succeed. The os uteri often affords considerable resistance to the introduction of the hand, in cases where the retention has subsisted for some days; but by very slow and gentle efforts, such as are scarcely felt by the patient, it may be dilated, and sometimes it yields very easily, or is not at all contracted. If, however, it be rigid and unyielding, we must not use violence; but this condition is rarely conjoined with retention of the entire placenta.

When a portion of the placenta is retained, we may derive advantage from injecting, frequently, warm water, or warm infusion of camomile flowers, or water with a very little muriatic acid added to it. A strong decoction of oak bark, has been proposed, to tan the retained substance. These injections may be made, by fixing a female catheter to an elastic-gum bottle; or a syringe with a long pipe may be employed.

Sometimes natural or artificial vomiting assists the expulsion.

The patient should be allowed the free use of fruit and vegetable acids, and light mild diet should be given in small quantity at a time. The bowels ought to be kept open, and opiates should occasionally be given to allay irritation. Vomiting and nausea may be checked or mitigated when urgent, by effervescing draughts. Bark, in small doses, has been given, but I cannot place much confidence in it. When there is a fulness about the abdomen, and tendency to inflammation, purgatives are of service. When the nervous system is much disturbed, the camphorated mixture may be given in its usual dose.

CHAP. VII.

Of Strangury.

After severe labour, the neck of the bladder and uretha are sometimes extremely sensible; and the whole of the vulva is ten-

der, and of a deep red colour. This is productive of very distressing strangury, which is occasionally accompanied with a considerable degree of fever. It is long of being removed, but yields at last to a course of gentle laxatives, opiates, and fomentations. Anodyne clysters are of service.

CHAP. VIII.

Of Pneumonia.

It is unnecessary to detail the symptoms of inflammation of the lungs or pleura. It is sufficient to say, that this disease is not uncommon in the puerperal state; and if there be such a state of the lungs during pregnancy, as tends toward phthisis, that disease is exceedingly apt to be rapidly induced after delivery.

Pleurisy requires, on the first attack, copious blood-letting, laxatives, and blisters, which are never to be omitted. If the early stage have passed over, the use of the lancet is doubtful, and it is better to trust to digitalis given freely, and the application of blisters. Laxatives are also not to be neglected.

CHAP. IX.

Of Spasmodic and Nervous Diseases.

Palpitation is not an uncommon disease after delivery. It usually attacks the patient suddenly, and often after a slight alarm. She feels a violent beating in the breast, and sometimes has a sense of suffocation; she has also a knocking within the head, with giddiness and a feeling of heat in the face.

The pulse is extremely rapid during the fit, and the patient is impressed with a belief that she is going to die. After the paroxysm, the mind is left timid, and the body languid. Sometimes it is succeeded by a profuse perspiration; and should the fits be frequently repeated, the temperature is variable during the intervals, and the stomach is filled with gas. This is often a very obstinate, but it is not a dangerous disease, unless it proceed from uterine disease, marked by pain and swelling of the belly. It is to be relieved by giving, during the paroxysm, a liberal dose of ether and laudanum; and during the intervals, antispasmodics, laxatives, and tonics are to be employed. As soon as possible, the patient should remove to the country.

Hysteric fits, hiccup, syncope, and dyspnœa, are to be treated upon general principles, by full doses of opium, and other antispasmodics, and clearing out the bowels with purgatives. When a patient is known to be subject to syncope, it will be proper to give her, the instant the child is born, a draught containing spiritus ammoniæ aromaticus, and laudanum, and to have the abdomen firmly supported by a bandage.

There is a species of dyspnœa, that depends upon exertion of the muscles of respiration during labour, or distention of the abdominal muscles. When the abdominal muscles are affected, the person often feels the difficulty of breathing, chiefly during expiration. It is relieved, by tightening a little the compress round the belly, and giving thirty drops of laudanum. When the diaphragm is affected, the uneasiness is usually greatest during inspiration; and there is often a pain in the side, or in the back, or about the pit of the stomach, which may be very severe. It is attended, sometimes, with a sense of stuffing in the breast; in other cases, with an acute feeling of suffocation, or very sharp pain across the lower part of the thorax, with deadly paleness, and the pulse is extremely rapid. A very large dose of laudanum, with ether or volatile tincture of valerian removes the spasm; if not, a sinapism must be applied. These affections come on within a few hours after delivery. The spasm of the diaphragm is to be distinguished from pleurisy, by its coming on suddenly, and being very acute; whereas, inflammation comes on more slowly, and is often preceded by a shiver-

ing fit; there is more cough, and the pulse at first is not so frequent, but is sharp.

Dyspnœa is also occasionally produced by the roller being tóo tight.

Colic may occur within a few days after delivery. It attacks suddenly, and generally in the evening. It is not preceded by shivering, but is sometimes accompanied with sickness. The pulse may at first be either slow or of the natural frequency, but soon becomes frequent. The pain is subject to exacerbation and remission, but sometimes does not entirely go off for several hours. The chief risk of this disease, is the induction of inflammation, if the irritation be not soon removed. The best remedy is, from two drachms to half an ounce of oil of turpentine, with some other laxative, such as half an ounce of castor oil, or tincture of senna. I was led to employ this remedy in painful affections of the stomach and bowels, not dependent on inflammation, from witnessing its excellent effects in the hands of veterinary practitioners, and from observing its safe and purgative quality in the human bowels, when given as a cure for tenia. If the turpentine fail, a large dose of laudanum is to be given in a clyster, and fomentations are to be used at the same time. It is generally beneficial to precede the anodyne by a saline clyster. If the symptoms do not go entirely off, the saline julap with laudanum is of service. If there be much flatulence, tincture of asafœtida and hyoscyamus are proper. Cramp in the stomach is very dangerous, when it occurs within three weeks after delivery. It requires the immediate exhibition of turpentine, and if that fail, of at least sixty, perhaps a hundred drops of laudanum, with a drachm of sulphuric ether, or two drachms of spiritus ammoniæ aromaticus; a sinapism is also to be applied to the region of the stomach.

Pain in the region of the kidney sometimes proves very troublesome for two or three days after delivery. It comes in paroxysms, which are relieved by sinapisms, fomentations, clysters, purges, and opiates.

CHAP. X.

Of Ephemeral Fever or Weed.

The increased irritability of the system, as well as the delicacy of particular organs after delivery, render women at that time peculiarly liable to febrile affections. Some of these seem to arise from the general irritability of the whole nervous system, others from local affection of the breasts, the bowels, or the uterus. The first of these symptomatic fevers, is generally pretty easily recognised by the sensibility of the breasts; the others, particularly that connected with the state of the womb, are often more ambiguous, the local symptoms being in many cases insidious.

The ephemera, or weed, as it has been called, is a fever usually of short duration; the paroxysm being completed generally within twenty-four, and always within forty-eight hours; for if it continue longer, it becomes a fever of a different description. It proceeds from great susceptibility of the nervous system, by which slight exposure to cold, mental agitation, or similar causes, excite a universal disorder of the frame. It consists of a cold, a hot, and a sweating stage; but if care be not taken, the paroxysm is apt to return; and we have either a distinct intermitting fever established, or sometimes, from the co-operation of additional causes, a continued and very troublesome fever is produced.

This disease, which in its simplest form is very much of a nervous nature, generally makes its attack within a week after delivery. It may be excited by exposure to cold, irregularities of diet, fatigue, exhaustion, passions of the mind, or want of rest. It is sometimes directly ushered in with a fit of palpitation, or is preceded by a frightful dream, from which the patient awakes in a shivering fit, with a rapid pulse; or the chill comes on, accompanied with pain in the back and head, after some slight alarm, or injudicious exposure to cold. When the cold stage has continued for some time, the hot one commences, and this ends in a profuse perspiration, which either carries off the fever completely, or procures a great remission of the symptoms. The head is usually

pained, often intensely, especially over the eyes, in the two first stages. The pulse is extremely rapid, until the third stage has continued for some time; it is also subject to very great irregularities, and is very changeable in its degree of frequency. The thirst is considerable, the stomach generally filled with flatus, and the belly bound. The mind often is weakened, and the patient is much afraid of dying. In some instances, she is slightly delirious; in others, she has shifting pains in the abdomen. If the paroxysm be repeated, the secretion of milk is diminished.

The paroxysm continues for some hours, and then may completely go off, not to return again. But in other cases, it recurs frequently, being always preceded by a cold fit, and often with a pain in the back; and sometimes the fit begins regularly one or two hours sooner every succeeding day. It is more favourable when the fit postpones. When this disease is not combined with any local injury, it is less dangerous than most fevers occurring in child-bed; but if it recur very frequently, and be attended with much debility, the danger increases in proportion to the continuance of the disease. Local derangement may take place very suddenly in the course of this ailment; the breasts are peculiarly liable to become inflamed; but more frequently, these local affections are rather causes than effects of the febrile state; and in all cases, where the paroxysms are repeated, it is necessary to examine carefully into the state of every organ, especially that of the breasts. A fatal termination is usually preceded by a coma, or vomiting of dark-coloured matter.

Delicate women, and those who have suffered much in parturition, are chiefly affected with this disease, but all are more or less liable to it, especially if the bowels be neglected.

It is distinguished from symptomatic fever arising from local inflammation, by the absence of the particular pain, and other specific symptoms, which attend these fevers, whilst in them the pulse is usually at first not so rapid as in the ephemeral fever.

In the cold stage, we give small quantities of warm fluid, and apply a bladder filled with warm water to the stomach, or a warm flannel to the back, on the commencement of the chilliness; or, if the patient be sick, and have a foul tongue, a gentle emetic of

ipecacuanha will be useful. If this be not required, we give a smart dose of calomel and jalap, or some other laxative amongst the first acts of our practice. Having hastened on the hot stage, we lessen very cautiously the number of the bed-clothes, and give saline julap with diluents, to bring on the sweating stage. When this is done, we are careful not to encourage perspiration too much, which increases the weakness, or brings out a miliary eruption, and renders the disease more obstinate. On the other hand, if the perspiration be too soon checked, the fever continues, or recurs more severely; a gentle sweat may be kept up for five or six hours by tepid fluids. Then we refrain from them; and when the process is over, the patient is to be cautiously shifted, the clothes being previously warmed. After the fit, if the patient is exhausted, a little wine may be given. In the whole paroxysm, we must watch against the sudden application of cold, which, in the two last stages, renews the shivering. When the fits recur, we may sometimes check them, by giving an opiate with ether, just before the expected accession, and applying heat to the back and stomach, the moment the chilliness is felt. It is of great consequence to keep the bowels open, by such medicine as agrees best with the patient, for the paroxysms often are repeated, from intestinal irritation alone. Tonic medicines, such as infusion of bark, sulphuric acid, or solution of arsenic, are useful; and in some cases valerian may be joined to these with advantage. Sleep is to be procured by opiates. During the whole time, the strength must be supported by suitable diet; and as soon as possible, the patient should be carried to the country. If the fits return often, it is generally necessary to give up nursing.

If derangement of any organ should take place during the recurrence of this disease, it must be treated on general principles; and it is to be recollected that the nature of the complaint is now changed, and the organ which is disordered claims our chief attention. Very frequently the breasts suffer, or the womb itself may be attacked. But we must be careful to distinguish such a modification of weed, from a symptomatic fever, beginning like weed, but altogether arising from the state of the womb, or other organs. The distinction is important, that no time be lost in combating the

disease; which in the one case does not at first exist, in the other, is present *ab originè*. When the local affection is acute, the diagnosis is easy; but I wish it to be impressed on the mind of my reader, that it may also be mild, and require attentive inquiry to ascertain it satisfactorily.

CHAP. XI.

Of the Milk Fever.

The secretion of the milk is usually ushered in with a slight degree of fever, or, at least, a frequency of the pulse. But sometimes it is attended with a smart febrile fit, preceded by shivering, and going off with a perspiration. This attack, if properly managed, seldom continues for twenty-four hours; and during this time, the breasts are full, hard, and painful, which distinguishes this from more dangerous fevers. Sometimes, during the hot fit, there is a slight delirium. A smart purge generally cures this disease, and is often used, in plethoric habits, on the third day after delivery, to prevent it. Mild diaphoretics, during the hot stage, are also proper. Applying the child early to the breast is a mean of prevention.

CHAP. XII.

Of Miliary Fever.

The miliary fever begins with chilliness, sickness, languor, sometimes amounting to syncope, and frequency of pulse, with heat of the skin. There is also a sense of pricking or itching on the surface; and sometimes the extremities are numbed. The fe-

brile symptoms usually continue for some time before the eruption appears, often for four or six days. Previous to the eruption, the patient feels very much oppressed, and has a great weight about the chest; the spirits are low, and a sour-smelled perspiration takes place in a profuse degree. The eyes are occasionally dull and watery, or inflamed, and the patient has ringing in the ears. The tongue is foul, and its edge red as in scarlatina. Aphthæ sometimes appear in the throat. The lochial discharge is diminished or suppressed. Before the eruption is seen, the skin feels rough like the cutis anserina. Presently a number of small red pustules appear like millet seeds, which are felt with the finger to be prominent. In a few hours, small vesicles form on their tops, containing a fluid, first straw coloured, and then white or yellow. In two or three days small scabs form, which fall off like scales. The pustules are generally distinct, but sometimes they form clusters. They appear first about the forehead, neck, and breast, and then spread to the trunk and extremities, but very rarely affect the face. Different crops of pustules may come out in the same fever. Burserius, and others, divide the pustules into several varieties; but most writers are satisfied with two, taken from the general appearance, the red and the white, and the first is attended with a milder disease than the second.

This disease is peculiarly apt to attack those who are weakened by fatigue, evacuations, or other causes; and hence we can easily explain, why women in child-bed should be subject to it.

Some have considered the eruption as altogether dependent on the perspiration. Others consider it as in many cases idiopathic; and both, perhaps, at times are right. We can only consider the disease as idiopathic, when the eruption mitigates the symptoms, when the fever goes off as the pustules arrive at maturity, and there is no other puerperal disease present, acting as an exciting cause. It does not appear to be contagious, unless connected with a fever which is so of itself, such as typhus.

Miliary eruption also occurs during child-bed, as a symptom connected with puerperal diseases. It often accompanies the milk-fever, or the weed, when the perspiration is injudiciously encouraged; and this is by far the most frequent form, under which the

febris miliaris appears. It never alleviates the symptoms. It may also accompany fevers connected with a morbid state of the peritoneum or brain, which generally prove fatal; death being preceded by vomiting of dark coloured fluid. Women, much reduced, have also partial miliary eruptions, generally of the white kind, without fever, which require no particular treatment.

Whether the miliary fever be idiopathic, or symptomatic, the treatment is the same. We endeavour, at first, to check or remove the fever, by means which I have pointed out in a former chapter.

When profuse perspiration, with or without eruption, takes place, we must cautiously abate it, by prudently lessening the quantity of bed-clothes, or making the bed-room cooler. The rest of the treatment consists chiefly in removing irritation from the intestines by the use of laxatives, and supporting the strength by light nourishing diet, whilst we use tonics, such as sulphuric acid or bark. These tend also to abate the perspiration, which is scarcely ever to be encouraged. The linen should be frequently changed. When the eruption suddenly recedes, we have been advised to renew the perspiration, apply blisters, and give musk and cordials, especially when convulsions are threatened. This dangerous retrocession, however, I have not met with, and apprehend that it very rarely occurs.

CHAP. XIII.

Of Intestinal Fever.

We shall presently have an opportunity of observing, that the state of the bowels frequently produces in children a very troublesome species of fever, which, though proceeding from a cause which has been some time in existence, makes its appearance suddenly. The same holds true with regard to women in child-

bed, who either from previous torpor or costiveness of the bowels during the end of gestation, or some error in diet after delivery, are seized, within eight or nine days, generally earlier, with fever, which passes for weed.

After an attack of shivering and chilliness, the patient becomes sick, oppressed at the stomach, and loathes food. The pulse is frequent, and the skin, except at the feet, feels, from the very first, hot to the touch of another person, though the woman herself complains of being cold. Afterwards she feels very hot, especially in the hands and feet;—she has no appetite,—is thirsty,—has a white slimy tongue,—is sick,—and occasionally vomits phlegm or bile, and is troubled with flatulence. The pulse is quick; she does not sleep, but rather slumbers, and is tormented with dreams and visions, and talks during her slumbers. Generally she complains of throbbing, often of confusion, but seldom of continued pain in the head, though for a short time headach may be severe. She has no fixed pain, nor any tumour in the belly, but complains rather of stitches or griping. The bowels may either be costive or loose; but in either case, the stools are fœtid and dark coloured; and, in general, laxatives operate both early and powerfully. The lochial discharge is not necessarily obstructed, nor does the secretion, of milk in many instances, suffer for several days. The eye and the countenance are nearly natural. The belly sometimes, in the course of the disease, becomes full and soft, as if the bowels were inflated, and this size occasionally continues during life. These symptoms may be complicated with others, proceeding from nervous irritation, such as palpitation, starting, &c., or in the course of the disease, new ones arising from injury of the function of the womb, may supervene, and are marked first by pain, and afterwards by tumefaction of the lower part of the belly, and pain in making water, or on passing the fæces. The duration of this fever varies from a few days to a fortnight.*

* Since the publication of this work, the fever I have called intestinal, has been described by Dr. Granville, in his Report, p. 160. He notices that it is sometimes, when there is much inflation of the bowels, mistaken for puerperal fever; but the tumefaction in the intestinal fever precedes pain in the bowels, and the symptoms are decidedly relieved by purgatives.

On the first appearance of this fever, a gentle emetic of ipecacuanha should be administered; and afterwards, when the operation is over, we determine to the surface, by giving the saline julap with tepid drink. Then, in a few hours, we administer a dose of rhubarb and magnesia to remove offensive matter from the bowels; or, if necessary, we give a suitable dose of castor oil, or calomel. After this, if there be considerable griping, or a tendency to much purging, we give an opiate-clyster, and repeat this every night till the bowels are less irritable, taking care, if they become costive, or the stools fœtid, to interpose, occasionally, gentle laxatives. The great principle indeed on which we proceed, is the early and prompt evacuation of the offensive matter, whether bilious or feculent, from the bowels, and the prevention of re-accumulation, and this must be done by such doses as are required. The diet must be very light, such as beef-tea, calves feet jelly, arrow root, &c., and if there be no diarrhœa, ripe fruit may be given. Ginger wine and water forms an excellent drink, and in a few days, such a quantity of Madeira wine may be given, as is found to impart a comfortable feeling, without inducing heat or restlessness. When the tongue becomes clean, small doses of colomba, or other bitters, will be useful. If there be much nervous irritation or palpitation, or tendency to delirium, the camphorated julap is proper.

More recently still, Dr. M. Hall appears to have described this fever under the name of "a serious puerperal affection," and enumerates the various complications which may take place, but which do not seem essential to the disorder, such as, vertigo, palpitation, feeling of sinking, &c., and divides the disease itself into two varieties, that which takes place acutely, and that which comes on more slowly; the former being preceded by more distinct shivering, and attended with more severe affections of the brain or abdominal viscera, than the latter.

CHAP. XIV.

Of Inflammation of the Uterus.

Inflammation of the womb may appear under two forms, the slight and the extensive. This is a distinction which those who are not much conversant in practice, may not be disposed to admit; but it will, nevertheless, be useful to describe them separately. The first begins within the ninth day, very like the ephemeral fever, and is considered by the nurse as a weed. The patient shivers, feels cold, is sick, and perhaps vomits. The pulse is frequent, but not hard nor sharp, the skin becomes warm, and between the cold and the establishment of the hot stage, the patient complains of a dull pain in the lower part of the belly. It is not constant, and is apt to pass for after-pains. The lochial discharge continues, and the secretion of milk is not checked. The pain, at first, and usually during the whole course of the disease, is slight, it is generally felt near the pubis, but it may also extend a little to one side, or toward the groin. Sometimes there is pain in the back, but frequently there is none, unless when the patient sits up. The pain in the belly very soon is not perceived when she lies still, but is felt when she turns, or when pretty considerable pressure is made with the hand, or occasionally one or two sharp pains dart through the uterine region. There is no hardness to be felt, and the belly is not tender, but becomes a little full; the lochial discharge gradually diminishes, but does not of necessity stop, and the milk sometimes continues plentiful. There is considerable thirst, no appetite, and the sleep is disturbed. The pulse, which at first is very frequent, falls in a day or two to 100, or varies from 90 to 108. The head is confused rather than painful, slight wandering pains may be felt in the belly or sides. The bowels are generally affected, being at first rather bound, afterwards loose or irregular, and the fæces dark, slimy, or fœtid. Sometimes there is a degree of strangury. In the course of a fortnight, the pulse becomes slower, the appetite gradually returns, and these circumstances are preceded or accompanied with a slight discharge of

blood from the womb, or of purulent matter by the rectum, or from the vagina. Sometimes the disease is much shorter in its course, being little more protracted than an ephemera, the symptoms yielding completely to the treatment; or they may be removed in so far as that all fever and pain go off; but when the patient comes to rise, she feels a pressure like prolapsus uteri, which continues for many days or even weeks, so that she cannot stand, but has an instinctive desire to run to a seat. It is not easy to distinguish this state from prolapsus, except by examination. The uterus is felt in its proper altitude, but often the os uteri is turned a little to one side, and the vagina is not lax, but may be rather rigid: pessaries give little or no relief. The complaint continues obstinate, preventing the patient from walking, though she is in tolerable health, until a little purulent matter, or still more frequently, a little blood, like the menses, be discharged, and then she is almost instantly cured.

The treatment of this species of uterine inflammation consists in exciting early a free and pretty copious perspiration, fomenting the belly, and opening the bowels with a smart purge. If the pains be more permanent, blisters may be necessary, and bloodletting, early employed, is useful, but most cases of this partial nature recover without the use of the lancet, merely by cuticular and intestinal evacuation.

The more serious and extensive inflammation of the uterus may be excited in consequence of rude management, or other causes. The disease usually begins between the second and fifth day after delivery, but it may take place at a later period. It is pointed out by a pain in the lower part of the belly, which gradually increases in violence, and continues without intermission, though it is subject to occasional aggravations. These aggravations, at first, seem to proceed from contractions or spasms of the inflamed fibres. The uterine region is very painful when it is pressed, and it is a little swelled. There is, however, no general swelling of the abdomen with tension, unless the peritoneum have become affected. But the parietes are rather slack, and we can feel distinctly the uterus through them, to be harder than usual, and it is very sensible. There is also pain felt in the back, which shoots to the groins, ac-

companied with sensation of weight; and there is usually a difficulty in voiding the urine, or a complete suppression, or distressing degree of strangury. The situation of the pain will vary according to the part of the uterus first and principally affected. The internal parts also become frequently of a deep red colour, and the vagina and uterus have their temperature increased. The lochial discharge is very early suppressed, and the secretion of milk diminished or destroyed. Nearly about the same time that the local symptoms appear, the system becomes affected. The patient has headach, often is sick, vomits bilious fluid, and generally feels chilly. The pulse very early becomes frequent, and somewhat hard, and the skin is felt to be hot. The tongue is white and dry, the urine high coloured and turbid, and if the bladder be affected, it may be suppressed. The vomiting in some cases continues, and the bowels are at first bound, but afterwards the stools are passed more frequently. If the peritoneum come to partake extensively of the disease, then we have early swelling, and tenderness of the abdomen, and the danger is greatly increased. Sometimes the internal or mucous membrane is chiefly affected, and, succeeding to pain, fever, and suppression of the lochia, we have a puriform discharge.

If the inflammation do not extend along the peritoneum, this disease is more easily cured than other visceral inflammations in the puerperal state. It may terminate favourably by a free perspiration, a diarrhœa, or a uterine hemorrhage; which last is the most frequent and complete crisis. If the pain abate, the pulse come down, and the lochia and secretion of milk return, we consider the patient as having the prospect of a speedy cure. But in many other cases the disease is more obstinate, the fever continues, the pulse becomes more frequent, but is full for a day or two, after which it becomes small, the tongue is redder, but dry, the pain does not abate, and in some days, shiverings take place, and the pain becomes of the throbbing kind. The face is pale, unless when the cheeks have a hectic flush; the urine, which was formerly high coloured, now deposits a pink-coloured sediment, in great abundance. The nights are spent without sleep, and the patient is wet with perspiration. After some time, matter is discharged from the

vagina, or by the bladder or rectum, but oftenest from the rectum. The hectic symptoms continue for many weeks, and may at last prove fatal. Sometimes the disease early proves fatal, the pulse increasing in frequency, the tongue becoming very red, and the strength sinking; but, even in this case, it will generally be found that suppuration has taken place. Pus is contained often in the ovaria and tubes, and sinuses of the uterus. Mortification is an extremely rare termination. This is a fact of which my dissections convince me, and it is farther confirmed by the opinion of Dr. Clarke. Little or no serous effusion takes place into the abdomen. In some cases the veins participate very extensively in the disease, and become inflamed to a great distance. Thus inflammation may spread toward the heart or liver, or down along the veins of one or both thighs. This is attended with great and debilitating fever, and much pain in the course of the affected veins, which, after death, are found inflamed, thickened, or filled with pus. The treatment of this complication must be conducted on the antiphlogistic plan, and a knowledge of the nature of the disease will call for early attention to local pain attended with fever.

Inflammation of the uterus may arise without any very perceptible predisposing or exciting cause, but frequently it is distinctly attributable to previous exertion during tedious labour, or to rash manual interference, or hurried extraction of the placenta, or exposure to cold. It, as well as peritoneal inflammation, is also peculiarly apt to affect those who have suffered from uterine hemorrhage.

This disease calls for the early and free use of the lancet, which is the principal remedy; and the number of times that we repeat the evacuation must depend on the constitution of the patient, the effects produced, and the period of the disease.* If three or four days have passed over, the pulse may be full and frequent; but this is an indication that suppuration is going on, which will be ascertained by throbbing pain, &c. In this case the lancet is hurtful. Mild laxatives are also highly proper. Fomentations, or a cloth

* The French writers erroneously do not consider the lancet as requisite, unless the symptoms be very acute, but trust rather to leeches applied to the vulva. Gardien, Tom. III. p. 447.

soaked in oil of turpentine, are useful. Diaphoretics ought to be administered, such as the saline julap, with the addition of antimonial wine and laudanum. This is the best internal remedy I think we can employ. Emollient clysters, or sometimes anodyne clysters, give relief. In the suppurative stage, we must keep the bowels open, give light nourishment, apply fomentations, and allay pain with anodynes. When the matter is discharged, a removal to the country will be useful, and tonic medicines should be given.

Sometimes the round ligament suffers chiefly, and the patient complains of pain and tenderness at the groin, increased by pressure. The lower part of the belly is, after a little, swelled and uneasy. Fever attends this disease, and sometimes the stomach becomes irritable. It is often caused by hasty extraction of the placenta. It requires the early use of laxatives; and if the symptoms are violent, it is proper to take blood from the arm, and apply leeches to the groin, which should seldom be omitted. Afterwards we employ fomentations and blisters. If neglected, the disease may end in suppuration, or in a painful swelling at the ring of the oblique muscle, which lasts a long time. This is sometimes removed by issues. Anodynes should be given to allay irritation, and the strength must be supported under the fever, which resembles hectic.

CHAP. XV.

Of Peritoneal Inflammation.

The peritoneal lining of the abdomen, or the covering of the intestines, may be inflamed alone; or this disease may be combined with inflammation of the uterus.

Peritoneal inflammation may be caused by violence during delivery, or the application of cold, or the injudicious use of stimulants. Those who have suffered from uterine hemorrhage after delivery, are most liable to this disease, as well as to inflammation

of the uterus. It may not come on for three weeks after delivery, but it usually commences on the second day, and earlier than inflammation of the womb; and it may often be observed, that the pulse continues frequent from the time of delivery. It is preceded or attended by a shivering and sickness, or vomiting, and is marked by pain in the belly, which sometimes is very universal; though, in other cases, it is at first confined to one spot. The abdomen very soon becomes swelled and tense, and the tension rapidly increases. The pulse is frequent, small, and sharp, the skin hot, the tongue either clean, or white and dry, the patient thirsty; she vomits frequently, and the milk and lochia are obstructed. These symptoms often come on very acutely, but it ought to be deeply impressed on the mind of the student, that they may also approach insidiously. Wandering pain is felt in the belly, neither acute nor altogether constant. It passes for after-pains, but it is attended with frequency of pulse, and some fulness of the belly, and a little sickness. But whether the early symptoms come on rapidly or slowly, they soon increase, the belly becomes as large as before delivery, and is often so tender, that the weight of the bed-clothes can scarcely be endured; the patient also feels much pain when she turns. The respiration becomes difficult, and sometimes a cough comes on, which aggravates the distress; or it appears from the first, attended with pain in the side as a prominent symptom. Sometimes the patient has a great inclination to belch, which always gives pain. The bowels are either costive, or the patient purges bilious or dark coloured fæces. These symptoms are more or less acute, according to the extent to which the peritoneum is affected. They are, at first, milder, and more protracted, in those cases where the inflammation begins in the uterus; and, in such, the pain is often not very great, nor very extensive, for some time. If the disease is to prove fatal, the swelling and tension of the belly increase, so that the abdomen becomes round and prominent, the vomiting continues, the pulse becomes very frequent and irregular, the fauces are aphthous, death is marked in the countenance, the extremities cold, and the pain usually ceases rather suddenly. The patient has unrefreshing slumber, and sometimes has *delirium mite*, but she may also remain sensible till the last. The disease

usually proves fatal within five days, but may be protracted for eight or ten days, or even longer. If the patient is to recover, the swelling does not proceed to a great degree; the pain gradually abates, the vomiting ceases, the pulse becomes fuller and slower, the breathing easier, so that the patient can lie better down in bed, and she can turn more easily. Sometimes this disease ends in suppuration, and the abscess points and bursts externally. Dr. Gordon, in his treatise on puerperal fever, relates three cases of this kind. In one of these, the matter was discharged from the umbilicus, a month after the attack; in another, six weeks after delivery; and in the third, after two months it came from the urethra. Similar cases have come under my own observation.

Upon dissection, the peritoneum is found in a state of high inflammation, but it is rare to find it mortified. A considerable effusion of serous fluid, mixed with curdy substance, is found in the belly.

The patient is only to be saved by vigorous means, and great attention. If the pulse continue above a hundred in the minute, for twenty-four hours after delivery, there is reason to apprehend that some serious mischief is about to happen; and therefore, unless the frequency depend decidedly on debility, produced by great hemorrhage, &c. we ought to open the bowels freely, and give a diaphoretic. We must carefully examine the belly, and if it be full, or painful on pressure, or if the patient be inclined to vomit, we ought instantly to open a vein, and use purgatives. One copious bleeding, on the very invasion of the disease, is more useful than ten afterwards; and the delay of two hours may be the loss of the patient. I know that many are unwilling to bleed women in the puerperal state, and the condition of the pulse may seem to young practitioners to forbid it. But in cases of peritoneal inflammation, not connected with contagious fever, I must strongly urge the necessity of blood-letting, at a very early period; and the evacuation is to be repeated or not, according to its effects, and the constitution of the patient. If she have borne it ill, and not been relieved, when it was used first, I apprehend that the case has not been simple peritoneal inflammation, but puerperal fever. If she bear it well, and the pulse become slower and fuller, and the pain

abate, we are encouraged to repeat it. I wish to impress on the mind of the student, in the most earnest manner, the fatal consequence of neglecting blood-letting in this disease. How many women fall a sacrifice to the timidity or inattention of their attendant! The lancet is the anchor of hope: it may indeed be pushed too far; it may be used by young practitioners in cases of spasm, mistaken for peritonitis; but the error is safer than the contrary extreme, for of two evils debility is more easily removed than inflammation. When I say this, however, I do not mean to urge the senseless and extravagant use of the lancet. A prudent practitioner will bleed early and freely, so long as he is thereby abating inflammation; but he will stop in time, and observe whether he be really gaining advantage by evacuation, or, on the contrary, sinking the patient, and destroying that vigour which is necessary for an effort to recover. He will never bleed late in the disease, unless it be to subdue an exacerbation, and unless the beneficial result of his practice confirm its propriety. Whilst some have been dilatory and too timid, others, I fear, have sunk their patients as effectually by inordinate evacuation, as if they had left the inflammation quite uncontrolled. After the lancet has been freely used, if pain continue, leeches, or the scarificator, may be applied to the most painful part. The bowels are at the very first to be opened freely with calomel, or some other purgative, which we require to give in a large dose, particularly calomel, for ordinary doses do no good. Dr. Armstrong gives half a dram of calomel, and afterwards a purgative draught of senna and salts to work it off, and I think the practice safe. In an advanced stage of the disease, after effusion has taken place, we must employ purges alone, rather than blood-letting. Sinapisms and blisters are also proper. Digitalis has been given, either to abate inflammation, or promote absorption after effusion has taken place; but I have not found it useful. After effusion has taken place, and debility is produced, cordials, of which wine is the best, should be given, and anodyne clysters are to be administered. There are one or two cases recorded, where the fluid had been either spontaneously discharged by an opening taking place in the intestine, or artificially by paracentesis, and with a good effect.

Chronic, or slow inflammation of the peritoneum, is not very unfrequent, and may last for some weeks. It is attended with constant pain in some part of the abdomen, but it is not unbearable; the belly is tender, the pulse frequent, the thirst urgent, and often the mind is affected as in hysteria; or a train of hysterical symptoms supervenes, which may lead off the attention from the seat of the disease. It requires at first blood-letting, and then the frequent use of laxatives, with repeated blisters.

When upon this subject, it may not be improper to mention, that a young practitioner may mistake spasmodic affections, or colic pains, for puerperal inflammation; for in such cases there is often retching and sensibility of the muscles, which renders pressure painful. But there is less heat of the skin, the tongue is moist, the pulse, though it may be frequent, is soft, the feet are often cold, the pain has great remissions if it do not go off completely, there is little fulness of the belly, and the patient is troubled with flatulence. It requires laxatives, antispasmodics, anodyne clysters, and friction with camphorated spirits. If these means do not give speedy relief, then we use the lancet. Blood drawn in this disease, after it has continued for some hours, even when the woman is not in childbed, is sizy, and it is always so in the puerperal, as well as the pregnant state, although the woman be well.

CHAP. XVI.

Of Puerperal Fever.

Puerperal fever begins sometimes in an insidious manner, without that shivering which usually gives intimation of the approach of a serious malady. In other cases, the shivering is perceived, and varies considerably in degree, being either slight or pretty severe. The first symptoms, independent of the shivering, are frequency of pulse, oppression, nausea, or retching, pain in the head, particuluarly over the eye-brows. The night is passed with

little sleep, much confusion, and occasionally some delirium. It must not, however, be unnoticed, that in many instances, there is no headach in any stage of the disease, nor any sickness or vomiting in the beginning. In some the temper is, from the first, uncommonly irritable; in others, there is much timidity, or listlessness, or apathy. Hysterical symptoms not unfrequently supervene; or particular nerves become more sensible; or organs of sense are affected: thus some imagine they hear the performance of a piece of music. From the beginning of the attack, or very soon afterwards, pain is felt in the belly, at first slight, but it presently increases; and in some instances, the abdomen becomes so tender, that even the weight of the bed-clothes is productive of distress. A general fulness of the belly accompanies this from the first, and it usually increases pretty rapidly, and may proceed so far as to make the patient nearly as large as she was before delivery, and in such cases, the breathing becomes very much oppressed: indeed, in every instance, the respiration is more or less affected, the free action of the abdominal muscles, which are concerned in that function, being productive of pain. The degree of pain, its seat, and period of accession, vary in different cases. In some, it evidently begins in the uterus, never going entirely off, yet being subject to severe exacerbation, accompanied with a sense of bearing down. The uterine region is painful, particularly toward one side. The os uteri, if examined, is not much more sensible than unual. There is generally pain in the back. In other cases, it is first felt about the lower ribs, on one side, and is accompanied by cough, the belly is tumid and tender when pressed, but excepting then, or when the patient turns, she complains little of it. Sometimes severe pain, like spasm, attacks the iliac region, and extends down the thigh, and toward the bladder and pubis. The face is sometimes flushed at first, or the cheeks are suffused, but the countenance, in general, is pale and ghastly, the eyes are without animation, and the lips and angles of the eyes are white. When the face is flushed, the cheeks are generally covered with a broad patch of deep red, whilst the brow and other parts are cadaverous, or covered with perspiration. The whole features indicate anxiety, if not terror, and great debility. Vomiting occasionally occurs

at the very commencement, and in that case it is bilious. In the course of the disease, it sometimes becomes so frequent, that nothing will stay in the stomach; and towards the conclusion of the fever, the fluid thrown up is dark coloured, and frequently fœtid. This is a symptom, which, so far as I have observed, always, if it do not proceed from a morbid structure, indicates, in whatever disease it occurs, an entire loss of tone of that organ. But to proceed with the history. There is great dejection of mind, languor, with general debility of the muscular fibres, and the patient lies chiefly on her back; or there is so much listlessness, that she sometimes makes little complaint. The skin is not very hot, but is rather clammy and relaxed. The tongue is pale or white at first, but presently becomes brown, and uniformly aphthæ appear in the throat, and extend down the œsophagus, and over all the inside of the mouth. From the irritability of the stomach and bowels, it is probable that these organs participate in the tender state; and from the cough which is excited, the upper part of the larynx seems also to be affected. It has already been mentioned, that from the first the pulse is very frequent, and is, at that period, fuller than in simple peritoneal inflammation, but it soon becomes feeble. The thirst is not always great, at least the patient is often careless about drink. The bowels are often at first bound; but afterwards, especially about the third day, they usually become loose, and the stools are dark, fœtid, and often frothy. This evacuation seems to give relief. It is indeed peculiarly deserving of remark, that often in this disease, either from spontaneous or artificial evacuation, or sometimes, without any perceptible cause, there is a delusive calm, and the patient is supposed to be better; but in such cases, I cannot say I ever remember to have found a corresponding improvement in the pulse, and therefore I placed no reliance on the apparent relief. The urine is dark coloured, has a brown sediment, and is passed frequently, and with pain. The lochial discharge is diminished, and has a bad smell, or is changed in appearance, or gradually ceases; and it is observable, that the re-appearance of the lochia, if they had been suppressed, is not critical. The secretion of milk stops, and the patient inquires very seldom about the child. In some cases, I have met with pleuritic symptoms.

As the disease advances, the pulse becomes more frequent and weaker, or tremulous. In bad cases, the swelling of the belly increases rapidly; but the pain does not always keep pace with the swelling, being sometimes least when the swelling is greatest, and in the end, it generally goes entirely off. The breathing becomes laborious, in proportion as the belly enlarges. The strength sinks, the pulse, always frequent, becomes weak and tremulous; the throat and mouth become sloughy; perhaps the stools are passed involuntarily, hiccup sometimes takes place, and the patient usually dies about the fifth day of the disease, but in some cases not until the fourteenth; in others so early as the second day. In some instances, death is preceded by low delirium, or stupor. In others, the mind continues unimpaired till within a few minutes of dissolution, and the patient is carried off after a fit of a convulsive kind.

This fever attacks generally on the second or sometimes on the third day after delivery, but it has also occurred so late as after a week. The earlier it attacks, the greater is the danger, and few women recover who have the belly much swelled.

On dissection, there is found in the abdomen, a considerable quantity of fluid, similar to that met with in peritonitis. The omentum and peritoneum are inflamed in a variable degree; sometimes considerably, sometimes very slightly, and gangrene is unusual. The swelling is neither proportioned to the inflammation nor effusion, nor in every instance dependant on these, but on that inflation of the bowels which results from the relaxation of the muscular fibres of the bowels, which is so common in the puerperal state, particularly in puerperal disease. The uterus, although sometimes the first seat of the pain, and occasionally found considerably inflamed, yet in general is not more affected than the intestines. In some cases, the thoracic viscera are inflamed.

It is most frequent, and most fatal, in hospitals. In private practice it is less malignant, though still very dangerous. It is sometimes epidemic, but I do not know that it has ever appeared, as a very prevailing epidemic, in this city, [Glasgow]; nor have I been able except in one season to trace the contagion from one woman to another. In hospitals, it has conspicuously appeared as a contagious disease. There has been much dispute whether the conta-

gion was one *sui generis*, or that of typhus or erysipelas, or hospital gangrene; or if the disease depended on some noxious state of the atmosphere, conjoined with the absorption of putrid matter. The disease appears to depend on inflammation of the peritoneum, conjoined with the operation of some debilitating poison, more or less contagious. It is not connected with the state of the labour, except in so far as that hemorrhage seems to predispose to it; but when epidemic, it occurs after a rapid and easy, as well as after a more painful labour.

It is important to distinguish this disease from simple peritonitis, which may generally be done by attention. In puerperal fever, the abdominal pain is seldom the most prominent symptom, unless it begin, like severe after-pains, with distinct remissions. There is more despondency, debility, and headach; less heat of the skin, less thirst, and less flushing of the face. In the peritoneal inflammation, the pain in the belly usually increases rapidly after it begins, and the swelling increases along with it. Pressure gives very great pain. The fever is inflammatory. Inflammation of the uterus has its proper symptoms.

This disease is dangerous, in proportion to the malignancy of the cause, and the situation of the patient. All writers agree, that in hospitals it is peculiarly fatal, and that few recover from it. In private practice, the disease is milder, but still it is most formidable. With regard to the best mode of treatment, there has been a great difference of opinion,* which partly depends on giving the

* Dr. Denman, Vol. II. p. 493, considers puerperal fever as contagious. He strongly advises early bleeding, giving an emetic or antimonial, so as to vomit, purge, or cause perspiration; and if this do good, he repeats the dose, and uses clysters, fomentations, leeches, and blisters. He gives an opiate at night and a laxative in the morning; or, if there be great diarrhœa, he employs emollient clysters. The strength is to be supported by spt. ether nit. or other cordials.

Dr. Leak, Vol. II. trusts much to blood-letting; if the patient be sick he gives a gentle vomit; if not, laxatives, and then antimonials; applies blisters, and in the end restrains purging with opiates, and prescribes bark.

Dr. Gordon, p. 77, et seq. depends on early and copious blood-letting, taking at first from 20 to 24 ounces, and purges with calomel and jalap. He is regulated rather by the period of the disease than the state of the pulse, bleeding, though it be feeble.

name of puerperal fever to different disorders. I am sorry that I find it much easier to say, what remedies have failed, than what

Dr. Butter purges and bleeds only where there is well marked inflammation, and is satisfied often with taking only three ounces of blood at a time, when there is an exacerbation.

Dr. Manning very rarely bleeds, but trusts to emetics and purges, and employs Dr. Denman's antimonial, which is two grains of tartar emetic, mixed with ℈ij of crabs' eyes, and the dose is from three to ten grains.

Dr. Walsh forbids venesection, and advises emetics, followed by opiates, and cordials.

Dr. Hulme trusts to clysters, purges and diaphoretics, and does not bleed unless there be pain in the hypogastrium, accompanied with violent stitches, and a resisting pulse. Even then he bleeds sparingly.

M. Doulcet advises repeated emetics, followed by oily potions, and bark, combined with camphor.

Mr. Whyte is against blood-letting. He gives at first a gentle emetic, followed by a laxative and diaphoretics. Then he gives bark, with vitriolic acid, and supports the strength.

Dr. Joseph Clark trusts chiefly to saline purges and fomentations.

Dr. John Clarke, in his excellent Essays, forbids venesection, and advises bark as freely as the stomach will bear it. Opium is also to be given, together with a moderate quantity of wine, along with sago. If there be much purging, the bark is to be omitted, till some rhubarb be given, or a vomit, if there be little pain in the belly.

Dr. Kirkland bleeds only if the patient have had little uterine discharge, and the pulse indicate it. He employs laxatives, and in the end bark and camphor.

Dr. Hull considers this disease as simple peritoneal inflammation, which may effect three classes, the robust, the feeble, and those who are in an intermediate state. In the first he bleeds and purges, in the second he begins with emetics and ends with bark, and in the third he bleeds with great caution.

Dr. Hamilton advises puerperal to be treated as putrid fever.

Guinot, Allan, and others recommend carbonate of potash, in doses of ten or fifteen grains.

M. Vigarous joins with those who consider this as not a fever *sui generis*, but one varying according to circumstances. It frequently begins, he says, before delivery, but becomes formed about the third day after it. He has five different species. 1st. The gastrobilious, proceeding from accumulation of bile during pregnancy. The essential symptom of this species is intense pain in the hypogastrium. He advises first ipecacuanha, which he trusts to chiefly, and then clysters, laxatives, and saline julap. 2d. The putrid bilious. This is occasioned by bleeding, or neglecting evacuants in the former species; or even without improper treatment, the fever may from the first be so violent, that bilious matter is absorbed. It is marked by great debility, small or intermitting pulse, tumour of the hypogastrium, with sharp pain and putrid symptoms, aphthæ,

have done good. I have stated, that in peritoneal inflammation, blood-letting and laxatives are the principal remedies; but in this

vomiting, fœtid stools, &c. He advises vomits, laxatives, and bark in great doses, with mineral acids, and clysters containing camphor. 3d. The pituitous fever, attended with vomiting of pituita. The surface is pale, the pulse has not the force or frequency it has on the former species, the heat in general not increased, anxiety, weight, and vertigo, rather than pain of head, often miliary spots, and the usual symptoms of pain in the belly, and subsidence of the breasts. He gives vomits, and afterwards three or four grains of ipecacuanha every three hours. If he uses purgatives, he conjoins them with tonics. 4th. With phlogistic affection, or inflammation of the womb, attended with great weight about the pelvis, swelling, pain, and hardness in the lower belly, suppression of evacuations, sharp frequent pulse, acute fever, and the countenance not so sunk as in the putrid disease. He advises venesection, leeches, and low diet. The same remedies, with blisters are to be used, if pleuritic symptoms occur. 5th. Sporadic fever, proceeding from cold, passions of the mind, &c. Puerperal fever he considers as apt to terminate in milky deposits in the brain, chest, legs, &c.

Dr. Armstrong considers this fever as decidedly inflammatory, and trusts to the early use of the lancet followed by a large dose of calomel, from one scruple to half a dram, with the subsequent assistance of infusion of senna with salts.

Dr. Brenan has published a pamphlet, recommending, in place of blood-letting, the free use of the oil of turpentine internally, and the external application to the belly of a cloth soaked in it.

Mr. Hey is decided as to the inflammatory nature of the disease, and trusts entirely to the early and free use of the lancet, and the administration of jalap and calomel, with other cathartics, so as to maintain a purging for two or three days, or longer, if necessary.

Hufeland applies cold poultices to the abdomen.

Gardien admits 6 species. 1st. Puerperal fever, complicated with la fievre angiotenique, or synocha, marked by the ardent symptoms of that fever. It is more strictly inflammatory, but is the least frequent species. It is to be treated by strict antiphlogistic regimen. Venesection is only allowable in the most robust and plethoric. A dozen of leeches applied to the vulva or anus are safer. Lactation is the best remedy, and the surest preventive. 2d. With la fievre adenomeningée, or mucous fever. This is met with often, and is more slow and insidious: the mouth is slimy, and the abdominal pain is obtuse. It is to be treated with bitters and tonics. 3d. With la fievre meningo-gastrique, or bilious state, marked by yellow tinge, epigastric pain, nausea, bad taste, &c. In this case, the violent abdominal pain is not always from inflammation. It is to be treated by emetics or purgatives, according as the stomach or bowels seem most affected. 4th. With la fievre adynamique, or putrid fever. This is the most fatal, but most rare species, and is marked by great weakness, small pulse, dry mouth, paleness, and fœtid diarrhœa. The pain is less acute, and the swelling is from gas. We should neither use the lancet, nor active tonics, such as bark,

disease blood-letting must be employed with greater caution. It must be resorted to very early, and ought not to be pushed very far. I am quite convinced that, in simple peritonitis, the lancet is the anchor of hope; but, in contagious or puerperal fever, it must be used with more circumspection, and is less to be depended on. I am fully aware, from experience, of the good effects of bleeding early in typhus or contagious fever; and, therefore, I have no prejudice against the remedy in this contagious disease. I have, on the contrary, used it freely myself, and have known it done so by others; and to this free trial I have been led, by the respectable testimony to its advantage, as well as the fatal issue of the disease under other treatment. I am, however, from observation, convinced, that if this remedy be useful, it is in the very early stage, and that it cannot be too soon employed. If the disease have gained any progress, I never have found it useful. Like other remedies, particularly purging, it has been followed by an apparent relief, but the pulse did not come down, nor was the patient cured. My conviction, therefore, is, and if an opinion given in an elementary work is to influence the conduct of those who read it, I cannot state it without a feeling of awful responsibility, that the lancet is only admissible in the very commencement of the disease, and if decided benefit be not derived then, we ought not to repeat the evacuation. It is my duty to say, and I do it, considering the opposite sentiments of good judges, with a sense of deference, that I have never known any patient recover, who had been largely and repeatedly bled, and that all my successful cases have been amongst those who either were not bled at all, or bled early, not above once, and that not abundantly. Were full and free depletion the proper remedy in this disease, and were no mistake committed by its advocates, in looking on hysteritis or peritonitis as puerperal fever, the lancet ought to be more uniformly beneficial. It ought not, indeed, to be more useful than in simple

but rather a kind of negative plan, giving lemonade and cream of tartar, or perhaps camphor. 5th. With la fievre ataxique, or nervous symptoms, as hiccup, convulsions, &c. 6th. With other local phlegmasiæ, as of the brain, lungs, &c.

peritonitis or enteritis, but if early and vigorously employed, it should not be much less so. Is this the case?*

On the appearance of the disease, it will be proper immediately to give a smart dose of some purgative medicine, such as infusion of senna, with the addition of Epsom salts, or calomel, succeeded by Epsom salts; afterwards we begin the use of bark, giving it as liberally as the stomach will bear, or administering it in the form of a clyster; at the same time we repeat occasionally the aperient medicine. Opiates given after purgatives, have the effect of abating irritation and pain, and of restraining immoderate diarrhœa, should that come on. Diarrhœa should not be allowed to continue long, and is always to be restrained, unless it evidently give relief, and the fæces be very fœtid. In this case, calomel and diluents should be employed. If there be tenesmus, anodyne clysters should be given after the use of the calomel. In all cases, we are to attend much to the bowels, using brisk purgatives and clysters, where there is no diarrhœa; milder doses alternated with opiate clysters, where there is. Vomiting is to be restrained by solid opium, and by an opium plaster applied to the region of the stomach: sometimes saline draughts are of service. Nausea has been supposed to indicate the necessity of an emetic; but if no relief be obtained from natural vomiting, which most practitioners admit, I do not see that artificial vomiting can be useful, nor does experience support the practice. Anodyne or rubefacient embrocations, sometimes abate the pain in the abdomen. The repeated application of blisters has been extolled by some, but I am much inclined to concur with Dr. Clarke, in thinking, that they rather excite an injurious irritation. Cloths wet with oil of turpentine applied to the belly, produce less constitutional irritation, and are at least as effectual, if not more so, in relieving the internal pain. They are generally more advantageous than fomentations. The strength should be supported by light nourishment, and ultimately by a moderate proportion of wine, or other cordials. Digitalis and

* The disease in this country is very generally a fever of increased action, and requires for its cure pretty copious depletion. Bleeding freely, purging actively with the neutral salts, and blisters to the region of the abdomen, are the remedies which have succeeded best in my hands. C.

other diuretics have been given, to carry off the effused fluid, but they have no effect. Some have drawn off the fluid by paracentesis. Emetics and antimonials, I am afraid, do more harm in general than good. Most authors, have laid down distinct and formal indications to be fulfilled; but it is much to be doubted, if the means proposed be adequate to the effect intended to be produced; or if all the parade of science has done more than show, that, with the addition of remedies for removing particular symptoms, one class of practitioners have trusted to the lancet as the chief engine of cure, and another to the use of bark and cordials. Peritonitis is much more frequent than puerperal fever.(a)

CHAP. XVII.

Of Swelled Leg.

The swelling of the inferior extremity, in puerperal women, is usually preceded by marks of uterine irritation, and a tender state of the parts within the pelvis. About a fortnight after delivery, sometimes a little earlier, or even so late as the fifth week, the patient complains of pain in the lower belly, increased by pressure, and occasionally has pain and difficulty in making water. The uterine region is somewhat swelled; the pulse is frequent, the skin

(a) It is most probable that the low form of fever here described, under the name of puerperal fever, is comparatively a rare disease in the United States of America, even in our large towns, but more especially so in situations in the country; and that what has by some been considered as that disease, and in which depletion has been found so useful, has been a species of peritonitis. Of this the Editor thinks he has known more than one instance. On the subject of fevers attacking puerperal women, he would particularly recommend to the student, the attentive perusal of the excellent essays of Dr. John Clarke, on the Inflammatory and Febrile diseases of lying-in women. Also, the valuable writings of Gordon of Aberdeen; Hey of Leeds, and Armstrong of Sunderland, on the puerperal fever which prevailed as an epidemic in those places.

hot, the thirst increased, and these symptoms are often preceded by shivering. Stiffness and pain are now felt in one of the groins, near the passage of the round ligament, or the exit of the tendon of the psoas muscle, or in some cases about the origin of the sartorius and rectus muscles. The pain is attended with swelling, and these two symptoms may proceed gradually down the limb; but more frequently, pain is felt suddenly in the calf of the leg, or at the knee, near the insertion of the sartorius muscle, and is most acute in the course of that muscle; it also darts down to the heel. Within twenty-four hours after the pain is felt, the limb swells, and becomes tense: it is hot, but not red; it is rather pale and somewhat shining. The swelling sometimes proceeds from the groin downwards; in other cases, it is first perceptible about the calf of the leg, and proceeds upwards. It generally procures an abatement of the pain, but does not remove it. On the contrary, the patient cannot move the leg, and it is tender to the touch. The inability to move it, however, does not depend altogether on the pain, but also on a want of command over the muscles. The pulse is very frequent, being often 140 in the minute, and generally is small and feeble, but sharp; the tongue is white and moist, the countenance has a pale chlorotic appearance, the thirst is considerable, the appetite is lost; the bowels are either bound, and the stools clay-coloured, or they are loose, and the stools very fœtid or bilious. The urine is muddy; the lochial discharge sometimes stops, or becomes fœtid; in other cases it is not at all affected. The nights are spent without sleep, and the patient perspires profusely. All the parts within the pelvis are tender, and the os uteri is open, but not more painful when touched, than the sides of the vagina or the internal muscles.

The period at which the swelling reaches the acmé is various, but often it is accomplished in twenty-four or forty-eight hours. It seldom makes the limb above double its usual size. Generally in ten days, sometimes in even two or three, the febrile symptoms, swelling, &c. abate; but they may be more protracted, and they rarely go off entirely, for a length of time. When they go off, the patient is left feeble, and the limb stiff, weak, and often, for a time, powerless. In the course of the cure, we frequently feel

hard bumps in different parts of the limb, especially on its back and inside. These are not glands; some consider them as indurated lymph, others as muscular contractions. At the top of the thigh, the inguinal glands are often felt swelled, even at the beginning of the complaint; but in some cases, I have found them not at all affected.

If the skin be punctured no serum is effused, at least, not in the same way as in anasarca, and the swelling is not increased in a depending posture.

In some cases the disease begins like rheumatism, affecting the back and hip joint.*(b)* Then the upper part of the thigh becomes painful and swelled, and next the calf of the leg suffers; sometimes the limb at first feels colder than the other. Occasionally the disease is very mild, and attended with little swelling. This is more apt to be the case when it is late of occurring, and is vigorously attacked at first.

In some instances, the patient has been sensible of the pain which expelled the child, rushing violently down the leg. After a short time it has abated, but about the usual period this disease has appeared.

In one or two instances, suppuration has taken place: mortification has also happened.

If the disease run its usual course, it is always a length of time before the patient recover, for the swelling does not go soon entirely away, and the strength is long of returning. In some instances, the limb remains permanently swelled and feeble.

After one leg has been affected, and even before the complaint has completed its course there, the other may become diseased; and this has no influence on the progress of the first. The second attack is sometimes the worst of the two, owing, perhaps, to the previous debility. A coldness is often felt in the second leg, be-

(*b*) It is an opinion entertained by some respectable and experienced practitioners, that this disease is in fact, a variety of rheumatism, and is to be managed on the general plan of treatment that is found to be successful in rheumatic fever. After the inflammatory stage is over, it is by them considered as running into the chronic state of rheumatism, and to be treated accordingly by the remedies appropriated to that form of disease.

fore the paroxysm comes on, and pain in the belly precedes the attack. The first leg may be a second time attacked. In one instance, both of the inferior and of the superior extremities, were successively attacked. The affection of the arm was preceded by pain, feeling of weight, and swelling of the lateral part of the thorax and back. In this case the lady, after severe uterine hemorrhage, had a smart attack of hysteritis, which required, but yielded completely to, the usual depleting plan. In a day or two afterwards this disease took place.

This is not generally a fatal disease, but it is tedious, and is often accompanied with hectic symptoms. Death, however, may be caused by suppuration or gangrene; or by exhaustion, proceeding from the violence of the constitutional disease; or from exertion made by the patient, which has sometimes proved suddenly fatal.

The production of this disease does not seem to depend on the circumstances of the labour, for it appears both after easy and difficult deliveries. Those who give suck, and those who do not, the strong and the weak, are affected by it. But if it be late of occurring, it is generally in those who have suffered from mammary abscess. It has succeeded an abortion, or suppression of urine, and a slight degree of it has followed abdominal pain, attendant on menstruation, and been repeated for one or two periods.

We seldom can detect any apparent exciting cause, but, when we can, it is generally cold; standing for instance, on a cold or damp floor. I am inclined to consider the cause to be an irritated or slightly inflamed state of the parts within the pelvis, which sometimes produces merely a stiffness and swelling at the passage of the round ligament, sometimes an irritation of the nerves which pass to the leg. Puzos and Levret consider the disease as proceeding from a depot of the milk. Most modern writers attribute it to an affection of the lymphatics, which are ruptured, or have their circulation interrupted by swelling of the inguinal glands. Dr. Hull considers the disease as an inflammatory affection, suddenly succeeded by effusion. I refer, for a view of the different opinions, to his Treatise on Phlegmatia Dolens. The disease seems to consist partly in inflammation, and partly in nervous irritation, pro-

ducing both pain, and a temporary species of palsy: and the cure consists in lessening the one, and allaying the other.

The treatment naturally divides itself into that of the limb, and that of the constitution.

Our first object is to check the disease within the pelvis. For this purpose, leeches ought to be applied to the groin, and we should immediately open the bowels with a purgative. A small blister should then be applied to the groin, or sinapisms may be applied to the groin, inside of the thigh, and near the knee on the leg, and afterwards cloths, wet with tepid solution of acetate of lead, or with warm vinegar.*(c)* These means may prevent the swelling, or render it milder. If the disease have already taken place in the limb, gentle friction, with warm oil, anodyne balsam, or camphorated oil will be useful, and should be frequently repeated. Fomentations sometimes give relief, but also in other cases, are rather disagreeable. The bowels should still be kept regular, but the patient is not to be purged. Opiates are useful, to allay irritation. When the acute symptoms are over, we endeavour to remove the swelling, and restore the tone of the part, by friction with camphorated spirits, and the use of the flesh brush, and a roller applied round the limb. The liberal use of solution of cream of tartar, is also in many cases of service. If the disease threaten to be lingering, small blisters may be applied to the groin, and different parts of the limb. If much weakness of the limb

(c) It is the practice at one of the best regulated lying-in hospitals, in London, to apply flannel, well soaked in hot vinegar, to the groin of the affected limb, as well as to the limb itself; and it is asserted, that no other remedies beyond those necessary to keep the bowels open, are ever used. [Vide Vol. V. of Lond. Med. and Phys. Journ.] The editor can, from experience, add his testimony in favour of the beneficial effects of this treatment.

Dr. John Clarke, recommends laying the whole leg affected, in a soft poultice, made as follows: To a peck of well dried bran, he adds an ounce of hot olive oil, and a pint of strong soap lees; these bein well mixed together, says the Doctor, form a poultice, which in these cases may be used with the greatest advantage; it has the good effect of keeping up a gentle perspiration, and forms the softest pillow which can be imagined, never failing to bring relief.

Dr. Hosack of New York, in this disease, strongly recommends the exhibition of a combination of squills and calomel, which he thinks has often produced the best effects.

remain, the cold bath is proper, or sometimes a bath of warm sea-water.

Besides these means, we must also employ remedies for abating the fever, and constitutional affection. At first we use saline draughts, but these are not to be often repeated, and must not be given so as to procure much perspiration. In a short time they should be exchanged for bark, sulphuric acid, and opiates, which tend to diminish the irritability. In the last stage we give a moderate quantity of wine. When the pain shifts like rheumatism, bark, and small does of calomel are useful. If the uterine discharge be fœtid, it is proper to inject tepid water, or infusion of camomile flowers into the vagina. Exposure to cold, during the first stage of recovery, may cause a relapse. The treatment thus consists chiefly in palliating symptoms, and supporting the strength. I cannot, however, agree with those who, in the very outset of the disease, give wine liberally, as there certainly does, at that time, exist an inflammatory tendency. The diet should be light and nutritious.*

CHAP. XVIII.

Of Paralysis.

Some women after delivery, lose for a time the power of the inferior extremities, although they may have had a very easy labour. This paralysis may exist in different degrees, and in some cases the muscles are painful. Sometimes it is attended with retention of urine. It is not accompanied with any cephalic symptoms. In

* I have met with but two cases of this strange affection, which I treated, very successfully, by copious bleeding, by very active purging, and by blisters applied to the groin, and extending up the abdomen. In these cases there was every appearance of high inflammatory action, accompanied with much pain. If the preceding remedies should fail, and the disease run on obstinately to the second stage, I would recommend large doses of opium to allay the pain, and calomel in the ordinary quantity, with a view of exciting salivation. C.

general, the disease wears off in a few weeks. Friction, the shower-bath, tonics, and gentle exercise on crutches, are the means of cure. The bowels are also to be kept open.

After a severe or instrumental delivery, the woman may complain of excessive pain about the loins and back, attended with lameness or even palsy. This is sometimes a very tedious complaint, but usually it is at last removed. A roller firmly applied, and anodyne embrocations, relieve the pain; at a more advanced period, sea-bathing is proper.*

Hemiplegia may attack women in the puerperal state, as well as at other times. It proceeds from the same cause, and requires the same treatment as usual. If death takes place, blood is found extravasated in the brain.

CHAP. XIX.

Of Puerperal Mania and Phrenitis.

All women, in the puerperal state, are more irritable, and more easily affected, both in body and mind, than at other times, and some even become delirious. The period at which this mental disease appears is various, but it is seldom if ever sooner than the third day, often not for a fortnight, and in some cases not for several weeks after delivery. It usually appears rather suddenly, the patient awakening, perhaps, terrified from a slumber; or it seems to be excited by some casual alarm. She is sometimes extremely voluble, talking incessantly, and generally about one object, supposing, for example, that her child is killed, or stolen; or, although naturally of a religious disposition, she may utter volleys of oaths, with great rapidity. In other cases, she is less talkative, but is

* Active purging is very useful in this disease. I have also known much good to be derived from blisters to the sacrum. C.

anxious to rise and go abroad. It is not, indeed, possible to describe the different varieties of incoherence, but there is oftener a tendency to raving than melancholy. She always recognises surrounding objects, and either answers any question put to her, or becomes more exasperated by it. She can by dint of perseverance, or by proper management, be for a time interrupted in her madness, or rendered in some degree obedient. In some instances, she reasons, for a little, pretty correctly on her insane idea. The eye has a troubled appearance, the pulse when there is much nervous irritation, or bodily exertion, is frequent, but it is not in general permanently so, though it is liable to accelerations; the skin is sometimes rather hot, the tongue white; the secretion of milk is often, but not always, diminished; and the bowels are usually costive. There is seldom permanent headach; but this symptom is sometimes produced pretty severely by attempts to go to stool, if accompanied by tenesmus, or by efforts to void urine in strangury. In some instances the patient recovers in a few hours, in others the mania remains for several weeks, or even some months; but I believe it never becomes permanent, nor does it prove fatal, unless dependent on phrenitis. Venesection has been advised in this disease; and its propriety will depend on the presence of symptoms of determination to the head, indicated by pain or heaviness, and by the state of the vascular system, with regard to increased action, and the evolution of heat. Where there is little febrile affection, I agree with those who consider it as hurtful, or at least as useless. In every case we may apply leeches to the temples, open the bowels with a smart purgative, keep the surface gently moist, by means of saline julap, and afterwards allay irritation with liberal doses of camphor. Blisters have by some, for whose opinion I have much regard, been considered as useless, or detrimental; but I am confident I have seen them do good, after they had discharged freely. Opium is a very doubtful remedy, it oftener makes the patient restless than procures sleep; but in the wane of the disease, it does in some cases agree with the patient, and is productive of great benefit. There is sometimes considerable difficulty in keeping the patient in bed, and making her take either food or medicine. It is therefore in such instances of great advantage to have early recourse to

the strait waistcoat, which not only commands the patient, but tends to make her exercise self-control. In the whole course of the disease, the greatest attention must be paid to the bowels. Often the patient voids both urine and fæces without telling, not from being unable to retain them, but from inattention or perversity. The mind is not at first the subject of management, but in the progress of the complaint, it may by prudent efforts be aided in convalescence, by cheerful conversation, light reading, music, and afterwards by daily walking and change of scene.*

Some are peculiarly liable to this disease after delivery,† in consequence of the irritable state of the nervous system at that time. In such cases, the patient ought to be bled occasionally during pregnancy, and particularly toward its conclusion; unremitting attention should especially be paid to the state of the alvine discharge, which I am disposed to consider as of the utmost importance. She must be carefully watched after parturition. Every irritation must be removed, every source of alarm or agitation obviated, and the camphorated julap with laxatives will be proper remedies, these being the most powerful means of diminishing the excessive irritability of the nervous system. It is impossible to be too vigilant of the state of the bowels, either in a prophylactic or curative view. The diet is also to be regulated. If the patient do not sleep

* In the management of this disease we are to observe the same rules as are applicable to mania generally. It would seem, however, to be more frequently attended with extreme nervous irritation, than inflammatory action. In the former state I have seen the most manifest advantage from large and repeated doses of the tincture of hops, where opium only aggravated the symptoms. In the latter state we should bleed and purge as long as there is increased excitement. Blisters to the head, and to the extremities, in either state will be beneficial. They will alike allay nervous irritation, or subdue inflammatory action, and thus produce calmness and ease. They are often, especially in mania, if applied in the proper condition of the system, which is after the excitement is a little reduced by previous blood-letting, *the best of our anodynes.* C.

† Gardien denies that this disease depends on the puerperal state, but says it is to be attributed to moral causes, as jealousy, fright, &c. He advises a blister to be applied to the neck; or if the lochia be obstructed, leeches to be applied to the vulva. A scruple of colocynth mixed with some bland substance, as lard, has been recommended, to be rubbed on the abdomen three times a day, to little purpose I fear.

well, hyoscyamus should be given. It is often of service to get the patient up as soon as can be done with safety, and have the mind occupied with such amusements and pursuits as keep it equally exercised, without risking irritation.

There is a variety of this disease, in which we find the patient, very soon after delivery, complains of restlessness, or rather inability to sleep. The head is slightly pained, there is a feeling of unusual muscular weakness, the pulse very little quicker than it ought to be. Then, rather rapidly, the symptoms become more marked, the pulse becomes very frequent, the skin hot, the face flushed, the hearing acute, the eyes suffused and sensible to light, the eyelids heavy. There is a sense of tightness in the throat, or suffocation; the feeling of muscular weakness is converted into a degree of paralytic debility; the head is acknowledged to be pained, but sometimes only a very indistinct and varying account can be got of the sensation. There is thirst, the bowels are costive, and the secretion of milk goes on. There is no apparent mental derangement, only the patient is generally very dull or still, though sometimes irritable. If the disease be not attacked vigorously, the paralytic symptoms increase; the pulse becomes very slow, and in many instances even death might follow. By instant venesection, to a considerable extent, all the febrile symptoms subside, the skin becomes cooler, the flushing goes off, the pulse falls from perhaps 130 to 80 or lower, and the patient says that she now can open her eyes freely, and feels relieved from weight in her head, which she remembers to have had, although before bleeding she perhaps would not admit its existence. In a few cases, by full purging and blistering the head, she is restored at once to health. But more frequently the recovery is partial. She complains still of muscular weakness, sometimes of her head, and often of extreme acuteness of hearing, or sensibility to light; and the mind is affected in so far, that she doubts the identity of her child; or becomes suspicious of her friends; or impressed with the idea of approaching evil; or indifferent about every thing. The appetite is generally keen. This state, by attention to the bowels, regulation of the mind, change of scene, or inducement to moderate but renewed exertion, goes off, although sometimes not for many months.

Melancholy usually comes on later than furious delirium. The disease differs nothing in appearance and symptoms from melancholy madness occurring at other times. It is obstinate, but generally goes off after the child is weaned, and the strength returns. It is therefore proper to remove the child, and send the patient to the country as soon as possible. In some instances, both kinds of madness seem to be dependent on a morbid irritation, such as inflammation of the mamma, &c. Here our attention must be directed to the cause.

Inflammation of the brain usually appears still earlier than delirium, from irritation. It may be caused by determination of blood to the head, or preternatural irritability of the sensorium, or may occur in consequence of a constitutional tendency to mania. It must be distinguished from puerperal delirium which is seldom dangerous, whilst this is a most fatal disease. It generally appears within the third day after parturition, but it may also take place later. The pulse usually continues frequent from the time of delivery. The patient does not sleep soundly, and indeed is watchful. She soon complains of throbbing within the head, or in the throat, or ears; then of confusion, hears acutely, dislikes the light, and speaks in a hurried manner, and often is unusually interested about some trifle. Then all at once furious delirium comes on; she talks rapidly and vociferously, the eyes move rapidly, are wild and sparkling, and very sensible to the light. This state may continue, with little interruption, till symptoms of compression appear, or there may be a short interval of reason, but presently the furor returns, and alternates perhaps with sullenness. The case is in these respects modified according to the inflammation; for sometimes it comes on rapidly and to a great extent, at other times it proceeds more slowly. The lochia are not suppressed, nor are the bowels bound, but the secretion of milk ceases. In three or four days, she becomes paralytic in one side, and then sinks into a low comatose state; the extremities becomes cold, the breathing laborious, and sometimes convulsions precede death. This disease requires the prompt and early use of the antiphlogistic treatment, general and local blood-letting, the use of purgatives, and the application of a blister to the scalp. The inflammatory symptoms

being subdued, the delirium abates, or goes off, by the use of remedies formerly pointed out.

CHAP. XX.

Of Bronchocele.

Swelling of the thyroid gland takes place, so much more frequently after parturition, than under other circumstances, that it may with propriety be noticed here. It appears within a few days after delivery, and is often attributed to exposure to cold. In other cases, the woman feels, during labour, as if something had given way about the throat. It may remain long in an indolent and stationary state, being productive either of no material inconvenience, or only of a slight difficulty of swallowing. In other instances, it augments in size, and becomes dangerous from its pressure on the neighbouring parts; or it inflames, forms a large abscess, and bursts. Enlargement of the left lobe is more dangerous than that of the right.*

* There is an intimate connexion between the thyroid gland and the brain. It is well known, that, very generally, one of the most remarkable symptoms of bronchocele is a gradual, though certain, decay of the intellectual faculties. This is strikingly exemplified in the Cretans of the Alps. The goitre, with this miserable race of people, is commonly, if not always, attended with idiotism. In the lower animals, if the gland be removed, a train of nervous affections will speedily follow, and finally fatuity, or a total extinction of mind. This has been proved by a series of experiments, made, as I have understood, by the celebrated Mr. Cooper of London. As soon as I heard of these facts, it occurred to me as being not at all improbable, that one of the hitherto unknown uses of this organ, might be to stay the circulation in cases of undue determination of blood to the head. I was assisted to this inference by the recollection of having seen it somewhere remarked, that in the cases alluded to, the gland is uniformly swelled more or less with blood. If, as it now seems to be admitted, that the brain acquires a certain proportion of blood for the regular performance of its functions, and that these will be equally impaired by any excess or deficiency of it, we can

Various remedies have been employed, such as burnt sponge, calomel, muriate of lime, &c., but these have seldom much effect. The immediate application of leeches, followed next day by the use of cold water, to the part, repeated blisters, and long continued friction, are more useful. If the tumour threaten to enlarge, which it often does, after every succeeding pregnancy, or even independent of gestation, it has been proposed to extirpate the tumour, or to tie the arteries going to it. If there be a tendency to suppuration, it ought to be encouraged, and treated on general principles.

CHAP. XXI.

Of Diarrhœa.

If the patient have been costive before delivery, large masses of fæces may come down afterwards, producing violent pains in the belly, piles, tenesmus, or uterine hemorrhage; or the same cause may excite diarrhœa with the passage of scybala. Both states require the use of gentle laxatives. Diarrhœa may also occur without previous costiveness; the stools are then fœtid or bilious. In this case the diet is to be strictly regulated; gentle laxatives are to be first given to evacuate the offensive matter, and then opiates are to be immediately resorted to. If neglected, great weak-

have no difficulty in conceiving how the brain becomes affected, either by an enlargement or total extirpation of the gland.

With respect to the production of *puerperal bronchocele* we have an obvious explanation. During parturition, and particularly if it be laborious, there is very frequently an efflux of blood to the head, and, as may be observed, a considerable distention of the thyroid gland. By this distention, which occasionally is so great, as to induce the woman to believe, "*that something has given way about her throat,*" the gland is relaxed; it receives thereby a larger quantity of blood, which necessarily nourishes a morbid growth of the part. C.

ness, uterine hemorrhage, or other serious consequences may be produced. When it is accompanied with bilious vomiting, and cramps or spasms, opiates are the principal remedy, and these must, if vomited, be given in the form of clysters.

CHAP. XXII.

Of Inflammation of the Mamma, and Excoriation of the Nipples.

Inflammation of the mamma may take place at any period of nursing, but is most readily excited within a month after delivery. It may be caused by the direct application of cold, retention of the milk in consequence of sore nipples, mechanical injury, mental causes, or it may occur in that febrile state, called weed. In general, the inflammation, however extensive it may afterwards become, is at first confined to a small spot. It may take place in the cellular substance alone, or it may affect the gland; it may be attended with much general swelling of the breast, or the tumour may be very circumscribed; it may run its course rapidly, or very slowly; and when abscess forms, and the integuments burst, we may have matter alone discharged, or there may be a slough of considerable magnitude found within the abscess. This proceeds from the destruction of one or more of the glands, which, if the inflammation run high, do not suppurate but die. Usually, there is a considerable degree of fever attending the complaint, and the pain is often severe, especially when the breast is extensively affected. It is a very difficult thing to prevent this inflammation from ending in suppuration. It is to be attempted, however, by purgatives, and the application of a tepid poultice of bread and milk, or cloths moistened with tepid water. Cold solution of acetate of lead, alone, or preceded by leeches, has been recommended, but I have long been obliged to abandon this practice, from

the little success which attended it.* If it was ever useful, it was only in slight cases, where it was adopted early, and the disease was chiefly in the cellular substance near the surface. If there be only a little diffused fulness, with some degree of pain, gentle friction with warm oil is useful. If the breast be distended with milk, it will be proper to have a little taken away occasionally, provided this can be done easily, and without increasing the pain. Our object in doing so is to diminish the tension, and prevent farther irritation from accumulation in the vessels. The breast is also to be carefully supported, and indeed the patient will be easiest in bed. When the pain becomes throbbing, a warm bread and milk poultice is proper to assist the suppurating process. After matter is formed, it ought to be freely let out, by an opening of sufficient size, provided there be no appearance of the abscess bursting soon of its own accord. This prevents insinuation of matter in the cellular substance of the breast. If the puncture be followed by a troublesome oozing of blood from the wound, dry lint and compression must be used. In one instance, I knew the hemorrhage prove fatal. After the abscess bursts, or is opened, there is for some time a discharge of purulent matter, which frequently is mixed with milk; then the surrounding hardness gradually abates. The poultice may be continued for several days, as it promotes the absorption of the indurated substance; but if it fret the surface, and encourage a kind of phagedenic erosion, it is to be exchanged for mild dressings. A little fine lint is to be applied on the aperture, but not so firmly as to confine the matter; and over this, a cloth spread with spermaceti ointment; great attention is to be paid to the evacuation of the matter, and the prevention of sinuses. Fungus at the orifice of the sinuses requires an escharotic.

In some instances the milk soon returns, and the patient can nurse with the breast which was affected, but more frequently it does not, and the child is brought up on one breast. It may even be requisite, if the fever and pain be great, and the secretion of milk much injured, to give up nursing altogether.

* I know of nothing so good in these cases, as bathing the breast with a mixture of laudanum, brandy, and hartshorn. C.

It sometimes happens, if the constitution be scrophulous, the mind much harassed, or the treatment not at first vigilant, that a very protracted, and even fatal disease may result. The patient has repeated, and almost daily shivering fits, followed by heat and perspiration, and accompanied with induration or spasm in the breast. She loses her appetite, and is constantly sick. Suppuration slowly forms, and perhaps the abscess bursts, after which the symptoms abate, but are soon renewed, and resist all internal and general remedies. On inspecting the breast, at some point distant from the original opening, a degree of œdema may be discovered, a never-failing sign of the existence of deep-seated matter there, and, by pressure, fluctuation may be ascertained. This may become distinct very rapidly, and therefore the breast should be examined carefully, at least once a-day. Poultices bring forward the abscess, but too slowly to save the strength, and, therefore, the new abscess, and every sinus which may have already formed or existed, must be, at one and the same time, freely and completely laid open; and so soon as a new gland suppurates, the same operation is to be performed. If this be neglected, numerous sinuses form, slowly discharging fœtid matter, and both breasts are often thus affected. There are daily shiverings, sick fits, and vomiting of bile, or absolute loathing at food, diarrhœa, and either perspiration, or a dry, scaly, or leprous state of the skin, and sometimes the internal glands seem to participate in the disease, as those of the mesentery, or the uterus is affected, and matter is discharged from the vagina. The pulse is frequent, and becomes gradually feebler; till, after a protracted suffering of some months, the patient sinks. It is observable, that often in these cases, which seem to depend on a constitutional cause, and when there is great debility, the sinuses heal rapidly, after being laid open, but a new gland instantly begins to suppurate. Internal remedies cannot be depended on here, for they cannot be retained. If they can be taken, they are those of a tonic nature that we would employ, with opiates to abate diarrhœa.

The diet must be as nourishing as possible, and a liberal allowance of that kind of wine which agrees best with the stomach must be given. Our prognosis, indeed, will be more or less favourable, according to the nourishment which can be taken. The main se-

curity, however, of the patient rests on an early stop being, if possible, put to the disease, by opening the abscesses or sinuses freely, and before the constitution have been injured, or undermined by repeated paroxysms of fever. It ought to be impressed on the mind of every practitioner, and every patient, that unremitting attention should be paid early to the state of the breast, and no deep-seated collection of matter ever be allowed to remain unopened; for we do not know where the mischief, if allowed to continue, may end. This is urgently necessary, in proportion to the severity of the constitutional symptoms.

There are indolent cases, where sinuses form and give little or no trouble, except by the dressing or attention they require. Timid patients will not submit to have these opened; but the cure will be hastened, if that were agreed to. In the former state it was, from the affection of the general health, and the state of the patient, imperative. In this indolent state, where the patient is in pretty good health, and walking about, it is proper, but nevertheless, more optional. Superficial sinuses should be laid open. Those which were very deep, should either have a counter opening made, or a seton introduced.

Sometimes, although the abscess heal readily, and have been small, an induration remains, which either may continue long indolent, and cause apprehension respecting future consequences, or it may occasion a relapse. It is to be removed by gentle friction with camphorated spirits three times a-day, and the application, in the intervals, of cloths wet with camphorated spirits of wine, with the addition of a tenth part of acetum lythargyri, or a bread and milk or cicuta poultice, may be applied. In more obstinate cases, mercurial friction, or a gentle course of mercury may be tried, but I cannot speak with any confidence of the effect. The bowels should always be kept open.

After an abscess heals, it is not uncommon for the breast to swell a little at night from weakness, and the same cause renders a relapse easy. It is therefore proper to invigorate the system, and defend the breast for some weeks more carefully than usual, from cold. When a relapse takes place, especially if the patient be not nursing, the tumour is sometimes pretty deep or indolent; is for a

long time hard to the feel; and gradually extends more through the breast, forming a pretty large substance, not unlike a scirrhous or scrophulous gland. But, during this time, suppuration is slowly going on, though there may be little pain. At last a more active change takes place, the pain increases, becomes throbbing, the skin grows red, and, finally, the abscess bursts. This state requires the application of warm poultices and hot fomentations.

Excoriation of the nipple is a very frequent affection, and often excites that disease we have just been considering. The ulcer may be extensive, but superficial; or it may be more circumscribed, but so deep as almost to divide the nipple. When the child sucks, the pain is severe, and sometimes a considerable quantity of blood flows from the part. In some instances, an aphthous state of the child's mouth excites this affection: in others, excoriation of the nipple affects the child. A variety of remedies have been employed. Spirituous, saline, and astringent lotions, have been used previous to delivery, with a view of rendering the parts more insensible: they have not always that effect, but they ought to be tried.*(d)* When excoriation takes place, fifteen grains of sulphate of zinc, dissolved in four ounces of rose water, form a very useful wash, which should be applied frequently. Solutions of sulphate of alumine, acetate of lead, sulphate of copper, nitrate of silver, &c. in such strength as just to smart a little, are also occasionally of service; and it is observable, that no application continues long to do good. Frequent changes, therefore, are necessary. The nipple should always be bathed with milk and water, or solution of borax, before applying the child. When chops take place, dressing the part with lint spread with spermaceti ointment, is sometimes of use. A combination of white wax, with fresh butter or melted marrow, with or without vegetable additions, form popular appli-

(d) In one instance which has been related to me by a respectable physician of this city, the suction of the nipple by a young puppy for about one month preceding parturition, had the most complete success in preventing the excessive soreness and suffering to which the lady had been subjected, in consequence of her previous labours. This, though to some it may perhaps appear an unpleasant preventive, yet is certainly worthy of the attention of those who have often experienced the extreme anguish arising from this variety of disease.

cations. Stimulating ointments, such as ung. hyd. nit. diluted with axunge, are sometimes of service; or the parts may be touched with burnt alum.(e)

It is often useful to apply a tin case over the nipple, to defend it, or broad rings of lead or ivory. It is also proper to make the child suck through a cow's teat, or an artificial nipple, that the irritation of its tongue or mouth may be avoided. This often is of great service, but it does not always succeed; and some children cannot suck through it. The artificial nipple is preferable to the cow's teat. It is made of elastic gum; but a small polished case or nipple, made of wood, covered with any soft substance to defend the gum, will serve the purpose. The assistance of a nurse to suckle the child through the night is useful. But although the nipples ought to be saved as much as possible, yet if we keep the child too long off, or permit the breast to become much distended, inflammation is apt to take place. When all these means fail, it is necessary to take off the child, as a preseverance in nursing exhausts the strength, and may excite fever. The part then heals rapidly.

Venereal ulcerations of the nipple or areola, accompanied with swelled glands in the axilla, and a diseased state of the child's mouth, require a course of mercury.

It may be proper, before concluding this chapter, to add some remarks on causes disqualifying a woman from nursing. If the nipple be very flat, and cannot by suction be drawn out, so that the child can get hold of it, the woman cannot nurse. A glass pipe, however, frequently used, sometimes remedies this defect. A deficiency of retentive power, so that the milk runs constantly out, is another disqualification, and it is not easy to find a remedy. When the milk disagrees with the child, having some bad quality, we are also under the necessity of employing another nurse. If the mother be very delicate, or be consumptive, or affected with obstinate melancholy, or have her eyes much inflamed, or the sight injured

(e) Richter recommends touching the ulceration of the nipple with the lunar caustic, and Dr. Hartshorne informs me he has tried this with success in several cases, where every other application had failed giving relief. The caustic should be applied once every two days.

by nursing, or if the secretion be very sparing, she must give up nursing. Some delicate women suffer so much from nursing, that chlorotic or phthisical symptoms are induced. In this case, we must take off the child. Opiates are useful, at bed time, to procure sleep, and the bowels are to be kept open. Many women, after delivery, are subject to disorders of the alimentary canal, especially diarrhœa and worms. These impair the health, and diminish the secretion of milk. They are to be treated with the usual remedies. Anasarca, jaundice, erysipelas, &c. may also occur in the puerperal state, and prevent nursing. The ordinary methods of cure are to be employed.

When a woman weans a child, or from the first does not suckle it, it is usual to give one or two doses of some purgative salt, by way of lessening the secretion of milk. The secretion is also checked by keeping off the child; but if the breasts be very much distended, so much must be taken away occasionally, by suction, or milking the breast, or applying a warm glass bell, as relieves the feeling of tension or pain. If this be neglected, inflammation may be excited.

Some women feel, after lying in, a considerable weakness or sensation of want about the belly, which is frequently increased by nursing. It is often produced by taking off the bandage too soon from the abdomen, which should not be done for a month at least, and is relieved by the application of a broad firm band round the belly. When there is constant aching in the back and failure of the appetite, nursing must be abandoned.

Pain in the side, or in the abdomen, which is sometimes produced by nursing, is often relieved by friction, warm plasters, and an invigorating plan. General weakness requires tonics, which must be varied.

CHAP. XXIII.

Of Tympanites.

In consequence of affection of the menstrual action, or after confinement, especially if the patient be exposed to cold, the bowels

become inflated, and the belly is slowly distended, without pain. This may also happen during nursing, or towards the cessation of the menses, giving rise in either case to an idea that the woman is pregnant. This complaint is not productive of bad health, but occasionally it causes acidity, and other dyspeptic symptoms, and it is moreover very unseemly. The enlargement is always increased about the menstrual period, if menstruation continue. It arises from a relaxation of the muscular fibres of the intestines, and may not only appear as a peculiar disease itself, but also accompany many puerperal affections, particularly of the febrile kind, although there be no inflammation of the bowels.

It is best prevented by keeping the bowels in a regular and active state, paying attention to the application of an abdominal binder after confinement, and avoiding exposure to cold, and other exciting causes of disease.

After it has taken place, it is exceedingly difficult to accomplish a cure. Brisk purgatives, the regular use of aperients, so as to excite a uniform, but not powerful action, carminatives, squills, turpentine, mercury, Harrowgate water, stimulating embrocations, regular compression, tonics, and sea bathing, have all been tried, but upon none of them can I place any great reliance. This disease is very apt to be succeeded by ascites, or ovarian dropsy.

Acute tympanites accompanied with fever, is a more formidable disease. This supervenes soon after delivery; there is a great degree of fever, increasing weakness, and a puffy swollen state of the belly, without pain. It requires purgatives and cordials, but is generally fatal, and perhaps is only a modification of puerperal fever.

CHAP. XXIV.

Of the Signs that a Woman has been recently delivered.

We discover that a woman has been recently delivered, by finding that the external parts are relaxed, and redder, or of a darker colour than usual. There is a sanguineous or lochial discharge.

The uterus is enlarged, and has neither the shape of the gravid nor unimpregnated uterus; the cervix is indistinct, and the os uteri is nearly circular, and will admit two or more fingers. The abdomen is prominent, and the integuments relaxed, wrinkled, and covered with light-coloured broken streaks. The breasts are enlarged, have the areola very distinct, and contain milk. It is possible for this secretion to take place independently of pregnancy, but not with the appearances just described.

By examination per vaginam, within a fortnight or three weeks after delivery, the uterus may still be felt larger than usual, its lips softer, and capable of admitting the point of the finger without much difficulty. The milk at this period will not have left the breasts, which are firm, and have a dark areola round the nipple. A question here occurs, May not all these appearances take place merely from hydatids? I reply, that hydatids certainly may produce the same effects with gestation, because they do generally spring from conception. It is, however, very rare for the belly to be enlarged to the same degree as in the end of pregnancy, and when the mass is expelled, as it is soft, the perineum cannot be injured. If then it can in a criminal case be proved, that the woman had the belly greatly enlarged, and if afterwards she is found with the breasts containing milk, the uterus large, and its mouth soft and open, and part of the perineum of the fourchette torn, there can be no doubt that she has borne a child. Other circumstances may also concur in confirming the opinion of the practitioner; as, for instance, if the patient give an absurd account of the way in which her bulk suddenly left her, ascribing it to a prespiration, which never in a single night can carry off the great size of the abdomen in the end of a supposed pregnancy.

Very contradictory accounts have been given by anatomists, of the appearance and size of the uterus, when inspected at different periods after delivery. If the woman die of hemorrhage, or from any cause destroying her, soon after delivery, the uterus is found like a large flattened pouch, from nine to twelve inches long. The cavity contains coagula or a bloody fluid, and its surface is covered with remains of the decidua. Often the marks of the attachment of the placenta are very visible. This part is of a dark

colour, so that the uterus is thought to be gangrenous, by those who are not aware of the circumstance. The surface being cleaned, the sound substance of the womb is seen. The vessels are extremely large and numerous. The fallopian tubes, round ligaments, and surface of the ovaria, are so vascular, that they have a purple colour. The spot where the ovum escaped, is more vascular than the rest of the ovarian surface. This state of the uterine appendages continues until the womb has returned to its unimpregnated state.

A week after delivery, the womb is as large as two fists. At the end of a fortnight, it will be found about six inches long, generally lying obliquely to one side. The inner surface is still bloody, and covered partially with a pulpy substance, like decidua. The muscularity is distinct, and the orbicular direction of the fibres round the orifice of the tubes very evident. The substance is whitish. The intestines have not yet assumed the same order as usual, but the distended cæcum is often more prominent than the rest.

It is a month at least, before the uterus return to its unimpregnated state, but the os uteri rarely, if ever, closes to the same degree as in the virgin state.

We know that the woman has had a recent miscarriage, by the state of the breasts, the sanguineous discharge from the vagina, the size of the uterus, and the softness and dilatation of its mouth. It the woman die, the womb is found enlarged, its inner surface covered with the decidua, or maternal portion of the placenta. The vessels are enlarged, the tubes and ligaments very vascular; the calyx of the ovum is bloody.

The appearances during life, or after death, which occur from a miscarriage, may also arise from the expulsion of hydatids, which usually are produced by the destruction of an ovum.

APPENDIX.

AS our author has not fully illustrated the mechanism of labour, as was desirable, in the different presentations of the vertex, and as an accurate and precise knowledge of the posttion of the head is necessary, preparatory to the proper application of and action with the forceps or vectis, we have thought it best to add the description of the passage of the head through the straits and cavity of the pelvis in the six different positions of the vertex, as minutely laid down and detailed by Baudelocque and Gardien. To these authors we must therefore acknowledge our obligations for the pages that follow; and we are persuaded, that to the student and young practitioner of midwifery, they will not be superfluous, but on the contrary, will deserve the most serious attention, as a compass to guide him in his course through, what would otherwise prove, a wilderness of doubt and uncertainty.

We have also added a table from the last edition of *Baudelocque's art des accouchemens*, which shows the comparative frequency of the different presentations, [at least in Paris] and of those difficult and preternatural cases which peremptorily require the assistance of art, either by means of the hand alone, or by the aid of instruments.

It has already been explained, that the vertex or crown of the head, the presentation of which constitutes the first order of natural labours, is recognised by the presence of a round solid tumour, of greater or lesser size, upon which we can trace several sutures and fontanelles.

But even when the vertex presents, the sutures and fontanelles do not always answer to the same point; which has induced practitioners of midwifery to distinguish the different positions of the vertex, according to the manner in which this part presents at the

superior strait, and which we determine by the relative situation of the fontanelles, and the direction of the sutures.

Although there is no point of the pelvis to which the posterior fontanelle, which we should always take for our guide, may not correspond, we may nevertheless confine the number of positions to six principal ones. Indeed, a sufficiently accurate idea might be given of natural parturition, by describing a lesser number of positions. But it becomes necessary to admit them as above enumerated, to explain fully those cases, where the intervention and aid of art becomes necessary. For properly to apply the forceps, and to act with them advantageously, the accurate knowledge of these different relations of the fœtal head with the pelvis, as well as its progress through the different stages of the labour, until delivered, is supposed to be well understood.

More clearly to comprehend this part of our subject, we may consider the circumference of the pelvis as divided into two segments, or semi-circumferences, one anterior and the other posterior. In the three first positions, [which have already been briefly enumerated in a note to Chapter 1st of the 2d Book, and which we shall presently more fully explain] the posterior fontanelle answers to one, of what we may venture to term the cardinal points of the anterior semi-circumference; in the three last, the same posterior fontanelle answers to one of the diametrically opposite points of the posterior semi-circumference.

If we observe the direction that the head pursues in each of these positions, when it is expelled by the efforts of nature alone, we shall find, that in each of them, it offers some peculiarities, which it is of importance to understand. The mechanism of these different species of labour, ought to be studied with the greater attention, as it is this knowledge, which is to guide the practitioner in all his operations, in those cases of labour, where malposition of the head occurs. Vide Chap. IV. Book II.

First Position. In this position, the posterior fontanelle answers to the left acetabulum. The back of the infant is situated towards the anterior and left lateral portion of the uterus and pelvis. The face and the breast answering to their posterior and right lateral portions. The feet and breech are towards the fundus uteri.

At the commencement of labour it is frequently only the middle portion of the sagittal suture which presents at the centre of the superior strait. Whilst both the fontanelles remain as yet out of the reach of the finger in the common examination; we cannot, therefore, at this period, accurately determine the precise position of the head. For although we may ascertain that the sagittal suture is directed from the left acetabulum to the right sacro-iliac symphysis, we are as yet ignorant whether the posterior fontanelle is situated in the anterior or posterior segment of the pelvis, and of consequence, whether the vertex presents in the first or the fourth position. The same difficulty presents in discriminating between the 2d and the 5th position, and between the 3d and the 6th, whilst we can merely reach the sagittal suture.

In the first period of labour, it is commonly one of the parietal bones which presents. As the labour advances, the middle portion of the sagittal suture retires from the centre of the pelvis, to give place to one of the fontanelles; and it is the posterior fontanelle that most frequently presents.

When the waters have been discharged, the first contractions of the uterus tend, in the natural progress of labour, to bend the head upon the breast. Whilst this is taking place, the posterior fontanelle approaches nearer and nearer to the centre of the pelvis. The head thus bent, continues to progress through the cavity, by passing from before backwards, in order to accommodate itself to the axis of the superior strait. It continues to descend, until checked by the sacrum, the coccyx, and the perinæum.

Whilst the head descends into the cavity of the pelvis in a diagonal direction, one of the parietal protuberances passes before the left sacro-iliac symphysis, and the other behind the right acetabulum.

In this position, it is the right parietal bone which answers to the arch of the pubis. One of the branches of the lambdoidal suture answers to the left limb of the pubis, and the other branch is directed towards the left ischiatic notch. This has been often mistaken for the sagittal suture, and in consequence of its direction, which is from before backwards, it has been supposed that the head had already performed its movement of rotation, by which

the posterior fontanelle is ultimately brought under the arch of the pubis.

The head having arrived at the bottom of the pelvis, cannot any longer follow its first direction, because it is checked by the sacrum and coccyx. The contractions of the uterus continuing to act upon it, force the occiput, as it were, to revolve from behind forwards upon the inclined plane, which the left side of the pelvis offers, in order to advance towards the symphysis of the pubis; whilst at the same time, the face turns into the hollow of the sacrum, as it were revolving from before backwards upon the inclined plane, which the other side of the pelvis presents. If the fingers are placed upon the posterior fontanelle, whilst the head retains it lateral position, it may sometimes be perceived to perform this movement on its axis during a strong pain.

Whilst the occiput approaches the arch of the pubis, the trunk remains without motion in the uterus. This pivot-like motion of the occiput, depends solely upon the twisting of the neck. This rotation being performed, the posterior fontanelle is situated towards the centre of the arch of the pubis, and the anterior towards the sacrum. The sagittal suture is parallel to the great diameter of the inferior strait. The branches of the lambdoidal suture answer to each side of the pelvis.

The chin, which, until this period, had remained constantly, applied to the breast, begins to recede from it. The occiput dilates the external parts, and engages under the arch of the pubis, under which it revolves, in rising and approaching towards the abdomen of the mother. Whilst the occiput thus progresses, the nape of the neck, which may be considered as the centre of motion, revolves under the inferior edge of the arch of the pubis. In this motion, the occiput passes over but a small space, whilst the chin, in describing a curve, progresses from the sacrum to the inferior commissure of the labia. The expulsive forces bear upon the forehead and upon the face, during this period of labour, and oblige the chin to recede from the breast. The neck is sufficiently long to allow the head to be delivered without the trunk's advancing. If the head in its passage does not accommodate itself to this curve line, above described, but descends directly in the direction of the

axis of the superior strait, every effort bears upon the perinæum, which is then in danger of rupturing in its centre. If we do not succeed in obliging the head to follow the direction above described, by applying pressure from behind forwards, and from the perinæum upwards, the only means which remains to prevent the laceration of this part is to apply the forceps, in order to direct the head forward, and thus oblige the chin to recede from the breast.

Scarcely is the head delivered, when the face turns towards the right thigh of the woman, to which it answered in the commencement of labour; for it only turns into the hollow of the sacrum, in consequence of the twisting of the neck, and resumes its first position, as soon as the neck is restored to its former situation.

When the head is completely delivered, the shoulders, which had entered the superior strait diagonally, as well as the head, turn one towards the pubis, and the other towards the sacrum. The left shoulder, which is towards the sacrum, approaches the vulva, and begins to be engaged there, whilst the right shoulder remains applied behind the symphysis of the pubis, until the other appears externally; which indicates, that when it is proper to assist in extricating the shoulders, we should act principally upon that which is placed posteriorly.

Such is the progress of nature in this species of parturition, as every one may convince himself, if he will trace it step by step, through the course of the labour. And in observing it, he will be able to distinguish three different movements. In the first period, the head bends itself towards the breast, and progresses through the cavity of the pelvis. In the second it performs a motion, which brings its long diameter in the direction of pubis and sacrum. In the third, the chin quits the breast, and the occiput turns backwards, in disengaging itself from under the pubis.

The head ought to present its greatest diameters to the greatest diameters of the straits; but as it regards the superior strait, it does not present as is commonly supposed, its smallest diameter to the smallest of that strait. Its smallest diameter is directed from one sacro-iliac symphysis, to the opposite acetabulum. The

portion of the head which passess between the pubis and the sacrum, is still narrower than that which is termed its small diameter.

This species of labour would always be the most advantageous, if the laws of nature were invariably carried into effect, but in proportion as nature varies from the line that has been delineated, the labour becomes more and more difficult, and often indeed impossible, without the aid of art.

Second Position. In this position the posterior fontanelle is placed behind the right acetabulum, and the anterior is situated before the left sacro-iliac symphysis, so that the back of the child answers to the anterior and right lateral portion of the uterus, and of the pelvis; whilst the face, the breast, and the knees, are situated towards their posterior and left lateral portions.

The mechanism of labour in this position, is perfectly similar to that of the preceding. As in that, if the expulsive forces are directed in such a manner, as to apply the chin of the infant more and more to the breast, the occiput progresses during the first period through the depth of the cavity. In the second period, the occiput slides from behind forwards upon the inclined plane, which is presented by the right side of the pelvis, in order to place itself under the arch of the pubis; whilst at the same time, the face turns into the hollow of the sacrum. In the third period, the expulsive forces oblige the chin to recede from the breast; the occiput dilates the vulva as it turns upwards towards the pubis. This movement of the occiput is but inconsiderable; it does nothing but turn itself, whilst the nape of the neck revolves under the superior part of the arch. In order that this revolving of the head backwards, which facilitates its expulsion may take place, it is necessary that the face should pass over a curve which measures in extent the whole length of the sacrum, to the anterior edge of the perinæum.

As soon as the head is delivered, the face turns towards the left thigh, to which it primarily answered. The left shoulder turns towards the pubis, and the right towards the sacrum. This latter alone advances until it appears at the vulva.

The relative proportions of the diameters of the child, with those of the pelvis, are really the same in this position as in the former. The occiput and the face have not a larger space to

traverse to arrive, the one at the symphysis pubis, and the other in the hollow of the sacrum, in the position where the posterior fontanelle is situated towards the right acetabulum, than in that where it is placed behind the left. Hence it would appear, that one of these positions ought to be as favourable as the other to the expulsion of the child. But there are, notwithstanding, greater difficulties experienced in that where the occiput is to the right; because the *rectum*, which is placed on the left side of the sacrum, prevents the forehead from turning so readily into the hollow of that bone.

Practitioners have supposed that it more frequently happens in this position, than in the preceding, that the direction of the expulsive powers, instead of advancing the occiput, as in the natural order, tends to throw it back upon the shoulders. What truth there is in this supposition, we shall not here stop to investigate.

Third Position. In this position the posterior fontanelle is behind the symphysis pubis, and the anterior before the projection of the sacrum. The back of the infant is towards the anterior, and its abdomen towards the posterior portion of the uterus. For a long time this was considered as the most common and the most advantageous position, but both of these suppositions are incorrect; for experience on the contrary proves, that it is very rare; so much so indeed, that many practitioners who have never met with it, have absolutely called its existence in question. Those who have imagined that the occiput constantly answered to the pubis from the commencement of labour, have only thought so, because they observed it disengage itself in this direction from the inferior strait. A regular examination through the whole process, would have taught them, that although the occiput is expelled from under the pubis, it nevertheless enters the superior strait diagonally. When the occiput passes through the superior strait directly behind the symphysis pubis, the long diameter of the head is opposed to the small diameter of this strait. The difficulty which is experienced by the head in its passage must be greater, as the friction must be more considerable. If no obliquity exists, parturition may nevertheless be accomplished with a sufficient degree of ease; because in a well formed pelvis, the short diameter of the strait is four inches, and the long diameter of the head is no greater. If the head engages

favourably, it only presents its height, or its perpendicular diameter, because the chin rises towards the breast of the infant, which facilitates the expulsion of the head.

There are but two periods to be taken notice of in the progress of this species of labour; the face remains towards the perinæum for some time after the delivery of the head; it does not turn to one or other of the thighs, until after the shoulders, which had entered the superior strait diagonally, have presented at the inferior strait, one being towards the pubis, and the other towards the sacrum; but they turn indifferently to one or the other part of the pelvis, because the head has not been obliged to perform the pivot-like motion. Of course, it is not in our power previously to designate, which shoulder will turn towards the pubis.

Fourth Position. In this position the anterior fontanelle is behind the left acetabulum, and the posterior before the right sacro-iliac symphysis, and the course of the sagittal suture is obliquely, from the former to the latter point. The back of the infant is to the right posterior portion, and its breast, &c. towards the left anterior portion of the uterus.

Although at the commencement of labour, the posterior fontanelle is placed towards the right sacro-iliac symphysis, the face does not always come out under the arch of the pubis. We sometimes observe, that the occiput approaches the right acetabulum, in proportion as the head advances in the pelvis. When this spontaneous conversion of the fourth to the second position takes place, it is to be considered as extremely favourable for the patient. From hence an inference has been drawn, that when the practitioner meets with this position, he ought at the commencement of labour to facilitate its progress, and lessen the sufferings of the female, when the face is turned towards the symphysis of the pubis, by making an effort to disengage it from that part, and bring the occiput during the pains, rather forward towards the pubis, than towards the sacrum. If the membranes have not been ruptured, it is impossible to touch the head during the existence of a pain. This conversion cannot be accomplished without risk, except we act at the instant of the discharge of the waters. When nature spontaneously produces this conversion in the fourth and fifth positions, the same change of relative situation takes place in the trunk. We ought not,

therefore, to attempt producing it by art, unless the child is sufficiently moveable, to permit the trunk to undergo the same changes in situation as the occiput; unless this were the case, the neck would suffer a twisting, which would amount to the third of a circle. It may be important to recollect the possibility of this conversion, in those cases in which we are obliged to apply the forceps, because the mode of proceeding will be different if that has taken place. We should, therefore, before applying the forceps, endeavour to ascertain whether or no the face is towards the pubis.

If the change of position, of which we have just spoken, has not taken place, the delivery of the head becomes more difficult, because, in the second period, the face turns towards the symphysis of the pubis. This part is disengaged with more difficulty from under the arch of the pubis, than the occiput; for the arch has less breadth in its superior part, than the forehead and the face of the infant. The form of the occiput, on the contrary, accommodates itself very well to the arch of the pubis, under which it turns, whilst the face disengages itself behind.

If in this position, the contractions of the uterus are directed in such a manner, as to bear upon the occiput, it descends into the pelvis, passing before the right sacro-iliac symphysis. When the head reaches the sacrum, it can no longer follow its first direction. The contractions of the uterus oblige it to perform a pivot-like motion, which turns the occiput into the hollow of the sacrum, descending along the inclined plane of the right side; whilst at the same time, the forehead places itself under the pubis, sliding along the inclined plane, which the left side of the pelvis offers. At the end of this second period, the anterior fontanelle is situated behind the pubis, and the posterior towards the sacrum.

In the last period, the forehead cannot engage under the arch of the pubis, as the occiput does in the three preceding positions; it is obliged to ascend behind the symphysis, to the internal surface of which it remains applied, whilst the posterior fontanelle passes over the length of the sacrum, the coccyx and the perinæum, to arrive at the bottom of the vulva. At this moment the edge of the perinæum is considerably stretched, and runs a greater risk of laceration than in the preceding positions. The perinæum not being capable of remaining stationary upon the inclined plane which the

occiput offers, retires suddenly towards the base of the neck of the infant.

The posterior edge of the perinæum becomes then the point of support, or axis, upon which the nape of the neck revolves, whilst the occiput turns backwards towards the anus of the woman. In proportion as the head turns backwards upon the perinæum, the face disengages from under the pubis. We observe successively appear the forehead, the orbits, the nose, the mouth and the chin. As soon as the chin appears externally, the face turns towards the left thigh, to which it primarily answered. The left shoulder presents afterwards towards the pubis, and the right towards the sacrum. That which is posterior, disengages the first, the other remaining stationary at that time.

Fifth Position. In this position the anterior fontanelle is behind the right acetabulum, and the posterior before the left sacro-iliac symphysis. The back of the infant is towards the left and posterior part of the uterus, its breast and abdomen is towards the right and anterior part. It is not unfrequently the case, that the efforts of nature alone are competent to convert this position into the first, the occiput gradually approaching towards the left acetabulum, in proportion as it descends into the pelvis. All the observations that have been made on the preceding position, with respect to attempting, by the aid of art, what nature herself sometimes performs, are equally applicable to this position.

The relations of the dimensions of the head of the child with those of the pelvis, are absolutely the same in this position, as in the preceding; the face turns equally upwards. Hence the mechanism of this species of labour, is in every respect similar to that of the preceding position. If every thing is in the natural order, the occiput descends into the pelvis, passing before the left sacro-iliac symphysis. In the second period it turns towards the sacrum, at the same time that the forehead turns towards the symphysis pubis. The presence of the rectum on the left side of the pelvis, renders this rotation more difficult, by preventing the occiput from turning freely into the hollow of the sacrum. This position is one of those, in which it is most essential to evacuate the rectum by an enema. As soon as the face is disengaged from under the pubis, it turns to the right groin. The right shoulder is afterwards directed towards

the pubis, and the left towards the sacrum. The latter alone advances until it appears at the vulva.

Sixth Position. In this position the anterior fontanelle is behind the pubis. The sagittal suture is parallel to the smallest diameter of the superior strait. The occiput and the back of the infant is towards the sacrum.

This position is the least favourable of all those which the occiput can take. Not only does the head present its length to the smallest diameter of the superior strait, but also the face is anterior, as it regards the pelvis, as in the two preceding positions. Happily it is the most rare of all. The rounded form of the head, with difficulty permits it to remain fixed during labour against the projection of the sacrum, so that even supposing it should answer to this part of the sacrum at the commencement of the labour, it would soon turn to one of its sides, which would be better accommodated to its figure. When we happen to see the face disengage itself from under the pubis towards the end of labour, we are not thence to suppose, that the head engaged in that way in the superior strait. Although in the two preceding positions, the head traverses this strait in a diagonal situation, the face, which in the first period, was placed toward one or other of the acetabula, turns by a pivot-like motion towards the arch of the pubis, from under which it is delivered.

We can distinguish but two periods in this position. If the expulsive forces of the uterus act upon the occiput as occurs in the natural order, it progresses through the pelvis before the sacrum. Whilst the forehead is applied against the internal surface of the symphysis of the pubis, the occiput, which ought to be delivered first, considerably distends the perinæum, passing over a curve line which extends from the hollow of the sacrum to the lower edge of the vulva. At this instant the perinæum retires backwards, and passes under the nape of the neck, which revolves above it, whilst the occiput turns backwards towards the anus of the woman. As soon as the occiput begins to turn backwards, the different parts of the face, which until then had been retained in the interior of the pelvis, successively disengage themselves from under the pubis, in the order which has already been pointed out.

When the chin appears externally, the face remains sometimes stationary; afterwards it turns towards one of the woman's groins, but only at the same instant that one of the shoulders presents towards the pubis, and the other towards the sacrum. This position, also, is one of those in which it is allowable to be ignorant which of the shoulders may present towards the pubis; for it is uncertain which; and when the change of position is procured by the aid of art, it is indifferent which we bring there.

These divisions of the presentations of the vertex or crown of the head, originated as we believe, with the experienced Baudelocque, and on this subject he very judiciously observes, that the head may without doubt present at the superior strait, in a manner different from those described. The posterior fontanelle, which as we have before observed, we should always take for our guide, may sometimes correspond to the intermediate spaces between these six points; so that we might perhaps distinguish six other positions, which might be again subdivided into as many more. This distinction, he remarks, would not only be useless and superfluous, but might confuse the ideas. There is not in fact any of these middle positions, which may not be referred to one of the six first; and each of them ought, therefore, properly to be designated by the name of that to which it approaches the nearest, as the mechanism of delivery in it is exactly the same.

These intermediate positions, therefore, ought to be referred to the three first, as often as the posterior fontanelle answers to any point of the anterior semi-circumference of the pelvis; because that fontanelle turns gradually towards the symphysis of the pubis, under which the occiput is ultimately situated.

The head, continues Baudelocque, sometimes follows this direction, even though the fontanelle in question, be placed opposite one of the sacro-iliac symphyses at the commencement of labour; but when it is more backward, and answers to some point in the posterior third of the superior strait, all those positions ought to be referred to the three latter, that is to say, to the fourth, fifth or sixth; because the occiput constantly turns in descending, towards the sacrum, and the forehead under the pubis.

No. 3.

COMPARATIVE STATEMENT

Of the Labours which were accomplished by Nature alone, with those in which the aid of Art was necessary.

Of *twelve thousand seven hundred and fifty-one* cases of Labour, 12,573 at least were accomplished naturally, and but *one hundred and seventy-eight*, at most, required the assistance of art; some by means of the hand alone, others with the forceps, or with the crotchet, after the perforation of the Cranium, which is in the proportion of 1 to 71 2-3.

Cases in which it became necessary to give assistance by the head alone, either because of the unfavourable situation of the child, or on account of the mal-conformation of the pelvis, or from accidental circumstances, which render the labour complex.

One hundred and thirty-two in all—which, in proportion to the whole, is as 1 to 96 3-5.

Viz: The child presenting

The face	18
The shoulders	38
The crown of the head with the umbilical cord	15
The breech	22
The feet	11
The other parts specified in the table	24
On account of convulsions and floodings	4
Total	132

The forceps were applied in *thirty-seven* cases, which is as 1 to 344 2-3.

The child presenting the face	2
The crown of the head	35

Of these latter the forceps were applied.
- In ten on account of the exit of the cord; ten on account of the exhaustion of the woman's strength.
- six on account of convulsions.
- seven on account of the unfavourable situation of the head, which had been thrown backwards, &c.
- two on account of the mal-conformation of pelvis.

The crotchet was employed, or the cranium perforated in *nine*—which is in the proportion of 1 to 1,416 2-3:

Viz: 1 on account of hydrocephalus in the child.
8 on account of great deformity of the pelvis.
One by gastrotomy to extract an extra-uterine fœtus.

Remark.—Of 42 children in whom the face presented, 16 were born without any assistance, 6 were brought to one of the positions of the vertex, after which they were delivered without assistance.

Of 198—where the breech or thighs presented, 176 were born without extra aid.

Of 147—where the feet presented, 136 were born in the same way.

Of 12,751, the cord first came out but 36 times, viz: 35 times when the vertex presented, and only once with the feet.

Sex of the Children.

Children born 12,751. 6,524 Boys. 6,227 Girls.

Children dead 530; viz: before the period of labour 412; during labour, or shortly after birth, 118.

The relative proportion of children still-born, and of those who survived but a few moments after birth, to 12,751, is as 1 to 24 1-2.

Weight of the Children.

7,077 were weighed with the greatest accuracy; and of this number,

34	weighed from 1 lb. to 1 1-2 lb.	2,799	weighed from 6 lb. to 6 3-4 lb.
69	from 2 lb. to 2 3-4 lb.	1,750	from 7 lb. to 7 3-4 lb.
164	from 3 lb. to 3 3-4 lb.	463	from 8 lb. to 8 3-4 lb.
396	from 4 lb. to 4 3-4 lb.	82	from 9 lb. to 9 1-2 lb.
1,317	from 5 lb. to 5 3-4 lb.	3	10 lb.

It would appear, from the result of the experience of the superintendents of the Hospital, from which the above table has been taken, that preternatural and difficult cases occur more frequently in certain years, than in others.

2 Ma
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